The Response of Debtors to Rate Changes*

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How borrowers respond to future changes in the interest rate on their debt matters for the transmission of monetary policy and for financial stability. Combining data from a large bank, a letter RCT, and an online survey, we study this question in the context of the German mortgage market, where since 2022 borrowers have faced high interest rates when their rate fixation period ends. We find that various borrower actions substantially reduce the impact of higher rates on monthly payments. Survey responses indicate high awareness of the evolution of interest rates and corroborate a strong propensity to prepare for the rate reset, which we show experimentally is sensitive to the size of the rate increase and to the distance from reset. The letter intervention does not affect rate beliefs, consistent with high ex-ante informedness and selection into reading, but increases awareness of available options and refinancing propensities among borrowers who had not taken action until close to the reset date.

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1 Introduction

The global surge in inflation that began in 2021 prompted many central banks to raise interest rates sharply. A key consequence has been a rise in household debt servicing costs, with mortgages—the dominant component of household debt—most affected. In many countries, including the US, Germany and France, mortgages typically have fixed interest rates for five, ten, or even more years. With fixed rates, an increase in market interest rates has staggered effects on debt-service costs, as higher rates only apply once a household needs to roll over their loan (also known as refinancing or remortgaging).[1]

With staggered refinancing, the extent and timing of the transmission of rate changes to household spending and potentially financial distress depends crucially on whether households are aware of and prepare for future increases in their mortgage rate. If borrowers adjust their behavior ahead of having to roll over their loan, then monetary policy may transmit more quickly than looking at the interest rates on the loan stock would suggest. Conversely, a lack of preparation might lead to financial stability risks that materialize with a considerable delay after the initial increase in market rates.

Our goal in this paper is to provide novel evidence on how households think about, prepare for, and ultimately react to increases in their mortgage rate. To do so, we rely on a unique combination of data from a large German bank, an experimental intervention to exogenously change borrowers' awareness and understanding of potential rate increases, and a survey of the bank's mortgagors to understand their beliefs and preparation.[2] The overall takeaway from our analysis is that borrowers in Germany are mostly aware of the interest rate environment and take various actions before and at expiration of their old loan to mitigate effects of higher rates on their monthly payments. This suggests that financial stability risks from higher rates, at least through the debt-service channel, are limited. Additionally, some actions borrowers take may mute monetary policy transmission (by reducing the pass-through of market interest rates) while others may amplify it (as borrowers build up and then use their savings to mitigate payment impacts). Our work highlights that details of the institutional setting are very important for the im-

[1] In contrast to the US, where the interest rate is usually fixed for the entire term of the mortgage, in most other countries with fixed-rate mortgages the loan *term* is typically substantially longer than the *fixation period*. For instance, German mortgages typically have terms of 25 to 35 years (over which the loan is amortized), but a rate fixation of "only" 5 to 15 years.

[2] We show that the loans in our bank data are broadly representative of outstanding mortgages in Germany. We also discuss that there appears to be some selection in which borrowers respond to our survey; however, importantly, our information provision experiment does not affect survey participation.

pact of rate changes on mortgage borrowers, and that results from existing work that has largely focused on the US and the UK may not generalize to other countries.

We begin our analysis by documenting patterns in the bank data over the last years. Specifically, we examine mortgagors with a sizable balance approaching the end of the rate fixation period. Until early 2022, they saw substantial decreases in their interest rate upon refinancing. Since then, however, market rates have strongly increased relative to expiring rates, with the gap often exceeding one percentage point (see Figure 1). If borrowers passively rolled over their loans, they would have experienced large reductions in monthly payments from refinancing up to 2022, but significant increases since then. Instead, we show that borrower actions substantially dampen the impact of rate changes on payments. Specifically, among borrowers who refinanced with the same bank, the average monthly payment increase since 2022 would have been 82 euros with passive refinancing. Instead, the realized increase has averaged only 20 euros.

We next examine the role of different borrower actions that mitigate the effects of higher rates on their monthly payments. First, German borrowers have the option of arranging a "forward mortgage" that allows them to lock in an interest rate up to four years prior to expiration of their old rate fixation. We show that when market interest rates began to increase in 2022, many borrowers rushed to take out such forward mortgages. Once market rates reached a new higher level, the demand for forward loans dried up quickly. Instead, a larger number of borrowers either pay off their mortgage completely or wait until close to expiration before refinancing.[3] Second, we study changes in loan terms conditional on refinancing. We find that as market rates increase, borrowers become less likely to reduce the term of their mortgage (which would accelerate amortization and increase payments), more likely to reduce the loan balance upon refinancing, and choose shorter rate fixation periods on the new loan. When we decompose the contributions of the different actions to mitigate the effects of higher rates on payments, the rate effects (from forwards) and term adjustments are most important on average.

While informative, the observational patterns only provide a partial view of the drivers behind borrowers' behavior. For instance, inaction could reflect unawareness of the changed

[3]While German mortgages do not have the same "free" prepayment option as their US counterparts, they can be refinanced freely starting six months from expiration, or after 10 years or more from origination. Additionally, many contracts feature the option of making an annual curtailment ("Sondertilgung") of 5% (or, rarely, 10%) of the original loan amount. When we observe loans being paid off at expiration, some of these loans could be refinanced with another provider; while our data contain some information on external refinancing, the coverage is imperfect.

rate environment or available actions, or a deliberate choice that may also involve other adjustments we are unable to observe. To provide a more complete view, we field two interventions in late 2024 with a subset of the borrowers we observe in the bank data: an online survey to elicit beliefs and actions, and a letter RCT to exogenously increase awareness of mortgage rates and possible actions, which in turn may affect behavior we can measure in the bank data.

The survey shows most respondents are well-informed about mortgage rates and state they take action to mitigate their impact. Specifically, respondents largely know about the recent evolution of interest rates, and they expect high rates to persist. Most borrowers who will have to refinance their mortgage state that they either have already prepared for the reset, or plan to do so. Borrowers report two key actions in an open-text response: they partially or fully repay their mortgage or locked in interest rates before they reached their current high. Both actions mitigate the impact of high current rates on interest payments, and borrowers provide this channel as the key motivation for their actions.

The survey also features a vignette experiment that provides causal evidence on how borrower preparation depends on the size of the anticipated rate increase and on the distance to reset. We randomly assign respondents into one of three hypothetical refinancing scenarios. Borrowers assigned to a smaller hypothetical rate increase (of 0.5 instead of two percentage points) significantly reduce the stated propensity to meet with a bank advisor and to try to raise income. A smaller rate hike also increases the propensity to lock in the future rate early with a forward mortgage and for longer. These findings are in line with what we document in the bank data and with what borrowers explain they do in open text in the survey. A more distant hypothetical reset (three years instead of one) decreases borrowers' information acquisition via meeting an advisor or screening other lenders as well as reduces attempts to increase disposable household income.

We then turn to the letter RCT. The letter illustrates the recent increase in interest rates and its possible impact on mortgage payments after refinancing, and explains how borrowers can cope with higher rates. The bank sent the letter to over 35,000 mortgagors subject to interest-rate risk. We first study letter effects in the survey, completed around one month after letter receipt. 34% of recipients remember reading the letter.[4] Letter receipt does not affect beliefs about mortgage rates, which is consistent with high ex-ante informedness. Instead, the letter increases familiarity with the option to make partial

[4]This is an estimated treatment effect, since we similarly ask control-group respondents whether they have received a letter from the bank and whether they have read it.

prepayments and lock in rates early using forward loans, and raises the stated likelihood of making prepayments in the hypothetical refinancing scenario.

In the bank data covering the six months following letter receipt, we do not detect significant overall treatment effects. However, letter recipients close to loan expiration are significantly more likely to meet with a bank advisor, refinance, or both. The magnitude of the treatment effect is substantial—for instance, treated borrowers within this subsample are about one-third more likely to meet with an advisor and open their new loan shortly thereafter than corresponding borrowers in the control group. This finding suggests that for a subset of borrowers, information frictions or limited awareness of the consequences of higher rates may be important.

Notwithstanding this result, our final analysis shows that selection into reading the letter likely limits the effectiveness of such interventions in nudging uninformed borrowers. It is primarily borrowers with larger loans, high self-reported financial literacy and income, and accurate interest-rate beliefs who read the letter. The heterogeneity suggests that lender (or regulator) communication about mortgages disproportionately reaches borrowers who are better informed to begin with, while reaching the less aware is hard.

Related literature Our paper contributes to studies of the transmission of monetary policy through the housing and mortgage market (e.g., Cloyne et al., 2020; Flodén et al., 2021; Jappelli and Scognamiglio, 2018). Much of this literature focuses on the impact of realized reductions in monthly payments on household outcomes, given the secular decline in interest rates over recent decades. For instance, Di Maggio et al. (2017) and Fuster and Willen (2017) exploit variation in the timing of rate resets of adjustable-rate mortgages in the US and find substantial effects of payment reductions on durable spending, debt repayment, and mortgage defaults. Some recent papers study effects of rate increases, which may differ from those of decreases. Kartashova and Zhou (2023) use data on Canadian mortgages to document spending changes once mortgage payments decrease, but not to increases. Adelino et al. (2025) and Bracke et al. (2024), like us, focus on the recent high-rate period and study responses of Portuguese and UK borrowers confronted with higher market rates upon refinancing.[5]

While much of this work convincingly shows that changes in debt service costs affect household spending and other outcomes, it is challenging to assess anticipation effects.

[5] Also related is work on the effects of payment increases that occur when individual mortgages start amortizing (Andersen et al., 2024; Jørring, 2024) or when households make final debt repayments (Scholnick, 2013; Stephens, 2008), and work examining other margins of adjustment aside from spending (Zator, 2024).

Indeed, the event-study methodology typically employed implicitly "differences out" anticipation effects that have taken place before the start of the event window, and is thus only able to detect anticipation effects that happen in the months immediately preceding the payment changes. Another challenge is to distinguish between potential drivers of the effects that take place when payments change, as they could reflect not only limited anticipation or awareness, but also financial constraints or other frictions. As a result, our understanding of how and why households respond to *anticipated* and *persistent* changes in the interest rate on their debt, or in disposable income more broadly, is still limited.[6]

We advance knowledge in this area by explicitly studying different actions that borrowers in our setting can take in anticipation of a mortgage rate change, and by directly measuring borrower awareness and preparation via a survey. Furthermore, our large-scale RCT provides us with an exogenous information shock that allows us to study effects on borrower awareness and actions. Perhaps most closely related is work by Druedahl et al. (2022), who estimate spending responses to future expected changes in adjustable-rate mortgage payments of Danish borrowers, exploiting naturally occurring information shocks from letters sent by the bank these authors work with. In comparison with this work, our contribution is to take a broader view at actions that borrowers can take ahead of the expiration of their rate fixation period; in that regard, the German setting offers borrowers a particularly rich set of options. Furthermore, we measure directly how aware households are of likely future rate changes and how they plan for them.

Within the mortgage literature, our study relates to work that documents suboptimal refinancing behavior, primarily in response to decreases in rates that borrowers fail to take advantage of—see, for instance, Campbell (2006), Keys et al. (2016), Fisher et al. (2024), or Gianinazzi (2023) for evidence from the US and the UK. The literature identifies various behavioral frictions that contribute to this suboptimal behavior, including inattention (Andersen et al., 2020), low financial literacy (Bajo and Barbi, 2018), and distrust of lender motives (Johnson et al., 2019). Bucks and Pence (2008) find that many US borrowers, especially those with adjustable-rate mortgages, appear to not understand the terms of their mortgage. Recent work by Byrne et al. (2023) conducts an RCT in Ireland, where

[6]While we focus primarily on changes in debt servicing, there is also work on effects of predictable and persistent changes in disposable income due to tax changes (Kueng, 2018b) or the exhaustion of unemployment benefits (Ganong and Noel, 2019). In addition, a large literature studies consumption responses to predictable or unpredictable *transitory* income changes or cash windfalls (e.g., Agarwal and Qian, 2014; Baker, 2018; Baugh et al., 2021; Fagereng et al., 2021; Fuster et al., 2021; Ganong and Noel, 2020; Jappelli and Pistaferri, 2010; Kueng, 2018a; Parker, 2017).

subsets of borrowers with an incentive to refinance their mortgage receive different types of letters, including subsequent reminder letters, that explain the possible savings from refinancing. The letters (and especially the reminders) lead to significant increases in refinancing rates, suggesting many borrowers are otherwise inattentive. In contrast, the effects of our letter experiment in a context of rising rates appear more limited, reflecting high ex-ante awareness and self-selection into reading the letters. While there are many potential drivers of the seemingly different conclusions across studies, one possibility is that borrowers become more attentive in an environment of rising rates.[7]

RCTs are used more broadly to study households' awareness of monetary policy and their response to being informed about it (e.g., Coibion et al., 2022, 2023).[8] Much of this work relies exclusively on surveys, and therefore cannot link survey responses to actual subsequently realized household choices measured in administrative data; instead, the primary behavioral outcomes studied usually consist of intentions or plans. The unique combination of an information experiment, follow-up surveys and access to granular bank data available to us allows us to overcome this limitation.

2 Institutional setting

In Germany, residential mortgages typically have initial rate fixation periods of 5–15 years, while the term over which the loan amortizes usually spans 25–35 years. At the end of the fixation, borrowers must refinance the residual amount at prevailing market rates, unless they choose full repayment. Refinancing can occur internally with the original lender (prolongation) or externally with a different bank.[9] German mortgages typically do not allow early full repayment during the fixation.[10] Refinance timing is thus essentially predetermined, which means the setting differs from the US, where freely-prepayable fixed-rate mortgages dominate and rate decreases trigger refinancing waves.

[7] In line with this possibility, Bhutta et al. (2021) show that as market rates increase, US borrowers obtain relatively better interest rates compared to lender offers, consistent with more intense mortgage shopping.

[8] Our use of survey vignettes, or "strategic surveys," follows Fuster et al. (2021) and Fuster and Zafar (2021), among others.

[9] While refinancing internally is free, switching lenders has some monetary costs (though these are typically less than 0.5% of the new loan amount; Lukas and Nöth, 2019) and time costs.

[10] There would be a prepayment penalty to compensate the lender for lost interest income. There are exceptions to this rule: borrowers can prepay their loan penalty-free upon sale of the property or, for mortgages with a fixation period above 10 years, after 10 years (with six months' notice).

The refinancing timeline, using our partner bank as a representative example, is as follows. Annually, the bank sends a letter with basic mortgage information, including the outstanding balance. Borrowers receive additional notifications about the end of the fixation three, two, and one year before expiry. Starting six months before expiration, borrowers can agree on a loan for refinancing. Around then, the bank also sends a reminder that the fixed-rate period will soon end and informs about current interest rates. Six weeks before expiration, borrowers who have not yet refinanced internally receive a letter with two prolongation offers, valid for 10 days. Borrowers can simply select one offer and return the signed letter to the bank. Negotiating different terms requires meeting a bank advisor. Without refinancing, mortgages automatically shift to a high variable rate (around 5% pre-2022, rising to above 9% thereafter). Less than 3% of borrowers remain on variable rates for extended periods.

The German mortgage market features three products that borrowers can use to mitigate interest-rate risk. First, *forward mortgages* allow locking in current rates up to 3–5 years ahead of expiration, for the fixation period thereafter. The cost for mitigation of rate risk typically amounts to a 0.25-percentage-point higher interest rate per year of advance lock-in. Other than this feature, a forward does not differ from a regular prolongation loan. Second, home savings contracts with immediate borrowing at a fixed interest rate (*Bausparen mit Vorfinanzierung*) eliminate rate risk from origination. During an initial savings phase, borrowers build up savings and only pay interest on the loan. At expiration of the loan, accumulated savings and a new fixed-rate loan combine for repayment. There is no rate risk because the interest rate on the new loan is specified at origination of the initial loan. Third, home savings contracts without immediate borrowing (*Bausparen ohne Vorfinanzierung*) first build savings and subsequently grant a mortgage at predetermined fixed rates. Accumulated savings and the mortgage then can repay an existing mortgage at fixation end, thereby averting rate risk often more than five years in advance.

Several other market characteristics merit mention. First, online brokers facilitating mortgage comparisons are common. Second, although full early repayment is generally not possible, some loans (about half in our sample) feature the right to make partial repayments once per year of up to 5% (or rarely 10%) of the original loan amount (*Sondertilgung*). Third, mortgages are typically full recourse. Fourth, interest tax deductions are limited to buy-to-let properties. Fifth, publicly subsidized loans via Germany's state-owned development bank (KfW) are available for specific purposes, like purchases of green homes. These mortgages share the refinancing structures and interest-rate risks

of standard mortgages, so we include them in our analysis. Sixth, mortgage lending is predominantly provided by banks without government guarantees or securitization; instead, similar to some other European countries, a covered bond system (*Pfandbriefe*) often supports funding. Seventh, the home-ownership rate of German households is relatively low, at less than 45% (e.g., Happel et al., 2024; Malmendier and Wellsjo, 2024).

3 Patterns from bank data

In this section, we study borrower activity over the period 2018–2025. Section 3.1 describes the bank data. Section 3.2 explores time variation in refinancing, and whether borrowers do so via regular prolongations or forwards. Section 3.3 studies actions borrowers take at the time they refinance, among those who stay with the current lender—in particular, balance reductions and choice of the new fixation period.

3.1 Bank data

Our analysis draws on proprietary data from the partner bank that provides detailed information on its mortgage customers. The sample includes all clients with a mortgage that is outstanding at some point between December 2017 and October 2024 and was originated through the bank's main brand and distribution channel.[11] The sample contains 240,556 mortgagors that we follow until May 2025, when the dataset ends. In total, the data cover 398,173 mortgage loans originated between 1997 and May 2025.

For each loan, we observe origination characteristics and yearly updated information on balance, interest rate, and loan status. In the case of internal refinancing, we are able to link the old loan to the new one—which is the primary reason why the number of loans is much higher than the number of borrowers. We can hence track changes in interest rates, monthly payment amounts, loan balance, and fixation periods across loans. As we observe the date of origination of the new loan, we can study the timing of refinancing decisions ahead of reset at high frequency.

Customer demographic information includes age, gender, marital status, employment status, zip code, and the length of the relationship with the bank. We also observe annual

[11] This distribution channel includes mortgage brokers in addition to the bank's retail business; it excludes independent asset managers that distribute customized bank products.

financial balances of clients' deposit accounts, securities accounts, and other debt holdings, such as personal loans. Our partner bank operates nationwide, offering services across all regions of Germany, as illustrated in Figure A.2. We also know if, when, and for which reason(s) borrowers in our sample meet with a bank advisor. For each meeting, the data record the general purpose, such as mortgage financing, deposits, and investments.

Sample characteristics Table 1 presents summary statistics for the main variables in the bank dataset. Panel A is on loan characteristics. The average mortgage in the sample has an initial loan amount of €125,000, an interest rate of 2.9%, monthly payments of €685, a fixation period of 10 years, and a total maturity of 20 years.[12] On average, the residual balance at the end of the fixation period is €79,000. 27% of the loans are forward loans and 11% are loans initiated by regular prolongation at expiration of an earlier rate fixation. 55% of loans do not allow borrowers to make annual partial prepayments (*Sondertilgungen*) during the fixation period; for the others, the vast majority allow annual partial prepayments up to 5% of the original balance.

Panel B provides borrower characteristics. The average borrower is 51 years old and has been a client of the bank for 13 years. 41% of borrowers also have a deposit account at the partner bank. Among those, the average balance is €28,500, while the median is much lower at €7,100. 7% of borrowers have a brokerage account at the bank. Borrowers meet with a bank advisor 0.42 times per year on average.

In some of our analyses of the bank data, we restrict the sample to loans with initial fixation length of up to 10 years, an expected residual balance at expiration of at least €10,000, and that have either already reached the end of their rate fixation period over our observation period 2018 to 2024 or that will reach it between 2025 and 2027. The loans by expiration year are described in Table 2, along with the outcomes.

Sample representativeness We compare our bank sample to mortgagors in the Bundesbank's representative Panel on Household Finances (PHF). The latest PHF data are from 2021, so we report 2021 mortgage characteristics for the subsample with a mortgage at that time in our bank data.[13] We restrict the PHF sample to the member of a household with a mortgage who reports to be most knowledgeable about financial matters.

Summary statistics on both samples indicate that on average, borrowers are of similar

[12] Note that this maturity may be shorter than the original maturity when a mortgagor acquired a property, as they may already have refinanced (in which case the remaining maturity is recorded). The same applies to the loan amount.

[13] We only observe current customer characteristics otherwise.

age, and their mortgage balance, fixation period, and interest rate are comparable (see Table A.1). The property value is larger in the bank sample, but needs to be interpreted with caution.[14] The monthly payment is larger in the PHF, which might reflect that some borrowers have mortgage debt with multiple lenders, as indicated by the larger fraction of borrowers with more than one source of collateral in the PHF. Overall, mortgages in our bank sample are broadly representative of German mortgages.

3.2 Refinancing activity

Figure 2 displays the cumulative share of borrowers who refinance their loan internally (either via a forward mortgage, or a regular prolongation), by year of expiration of the rate fixation.[15] Several features stand out. First, less than 45% of borrowers refinance internally; the others either pay down the loan at expiration, or refinance with another provider.[16] Second, a large share of internal refinancing happens over the last months prior to the expiration of the old loan, but there are also many borrowers that refinance their mortgage one year or more prior to expiration, via a forward contract. Third, looking at the expiration vintages 2023 to 2025, there is an unusual increase in refinancing activity around three years (2025), two years (2024) and one year (2023) prior to expiration. This increase can be ascribed to borrowers refinancing via forward mortgages once market rates started increasing rapidly in early 2022, as we explain below.[17] Fourth, in more recent expiration vintages, fewer borrowers refinance internally—consistent with the higher market rates leading borrowers to seek alternatives.

Figure 3 shows directly that as market interest rates started rapidly increasing over the first half of 2022, there was a spike in forward-mortgage originations, primarily driven by borrowers with up to two years left before the expiration of their existing rate. Then, as rates further increased over the second half of 2022, and stayed high from 2023 onward, forward originations dropped substantially.

We next turn to hazard models to statistically estimate how refinancing propensities

[14] We report the value of the property if bought after 2015, which makes it difficult to compare the number to other mortgage characteristics, reported independent of the year of purchase. In the PHF, respondents self-report the purchase price of the property. In our bank data, we report the initial value of the collateral.

[15] We restrict the sample to loans with a projected residual balance at expiration of € 10,000 or more, with an original rate fixation between five and ten years that expires prior to May 2025.

[16] The data contain a flag for external refinancing, but we do not rely on it, as it is not fully populated.

[17] The final column of Table 2 shows that the ratio of internal refinancing via forwards versus regular prolongations reached a record high for the 2023 expiration vintage.

are affected by (i) the gap between the current rate available in the market and a borrower's existing rate; (ii) recent changes in market rates; and (iii) other loan and borrower characteristics. Formally, we estimate Cox proportional hazard models, which posit that the hazard rate of loan i refinancing in month t prior to expiration is given by

$$h(t|R_t^m, R_i, \mathbf{X}_{it}) = h_0(t) \cdot \exp(\beta_1(R_t^m - R_i) + \beta_2 \Delta R_t^m + \Gamma \mathbf{X}_{it}). \quad (1)$$

Our main variables of interest are $(R_t^m - R_i)$, which is the gap (in percentage points) between the market rate on a 10-year mortgage at time t and the interest rate a borrower pays on their old loan, and ΔR_t^m, which is the three-month change in the market rate. The coefficient β_1 indicates how sensitive borrowers' refinancing actions are to rate differences, and β_2 whether recent changes in market rates affect borrower behavior. Finally, $\mathbf{X}_{it}$ covers borrower and loan characteristics, including the loan size, that could also influence refinancing decisions. In one specification, we include year-month fixed effects, which means that we absorb any aggregate effects that could influence refinancing, and that β_2 is not identified in that specification.[18] The baseline hazard $h_0(t)$ is unrestricted, and we allow it to vary by origination year of the mortgage in some specifications to control for potential unobservable effects that differ across origination vintages. We cluster standard errors by calendar month. Our estimation sample includes 126,836 loans with rate fixation ending between 2018 and 2028, of which 42,095 have refinanced internally (via a forward or regular prolongation). We include loans in the estimation sample from 48 months prior to the expiration of their fixation.

The results in Table 3 confirm the patterns seen in the charts, and show that they are robust to the inclusion of control variables. Column 1 indicates that borrowers who are paying a rate below the current market rate are less likely to refinance with the bank—per one-percentage-point increase in the gap, the hazard of refinancing decreases by about 13%. Column 2 shows that refinancing hazards are higher when market interest rates have been increasing (which was the case in particular during 2022), consistent with borrowers rushing to refinance to lock in a rate before market rates increase further. The first two findings may appear to contradict each other, because increases in market rates, which we find to increase internal refinancing, lead to larger rate gaps, which in turn reduce refinancing. Column 3 shows that when we control for both of them jointly, both coefficients increase in magnitude (away from one), consistent with these countervailing

[18] The coefficient β_1 is identified from variation in R_i.

effects.[19] Finally, the remaining two columns show that these coefficients are stable when we add borrower- and loan-level controls, allow the baseline hazard to vary by origination vintage, and add year-month fixed effects.[20]

In sum, the results in this section indicate that borrowers are more likely to refinance their loan internally when the market rate is below their existing rate. In addition, refinancing activity is sensitive to recent changes in market rates, potentially suggesting time-varying attention by at least some borrowers: they refinance (often by taking out a forward) after rates started increasing, but had not taken action when rates were still lower, even though they could have obtained a more favorable rate.

3.3 Borrower actions and impact on monthly payments

When borrowers refinance internally, we observe their old and new interest rate, fixation period, mortgage balance, and resulting monthly payment. This allows us to study actions—in addition to the timing of the refinancing—that borrowers can take to influence the impact of rate changes on their mortgage. In this section, we study to what extent these actions mitigate potential payment changes.

Payment changes Panel A of Figure 4 reports the distribution of monthly payment changes upon refinancing, calculated as the difference between the monthly payment on the new contract and that on the old contract, for loans that are refinanced internally. Despite interest rates post-2021 being substantially above what they were 10 years before (Figure 1), we observe no significant increase in payments. Specifically, for the median internally refinanced loan the monthly payment is unchanged after refinancing.

Counterfactual payments To quantify the role of borrowers' actions in mitigating the pass-through, we compare the realized monthly payments with a passive counterfactual, which we define as the hypothetical payment the borrower would have faced had they simply rolled over the residual debt without any loan modifications. As explained in

[19] The magnitude of the estimated β_2 may appear very large—a one-percentage-point increase in the market rate increases the refinancing hazard by 70% (Column 3) or 88% (Column 4). Note though that these are changes relative to a low baseline hazard—about 0.5% monthly refinancing hazard up until six months prior to expiration, then increasing to about 2%.

[20] The coefficients on the control variables indicate that borrowers with larger loans and longer residual terms are more likely to refinance internally—consistent with limited ability to pay off the loan at expiration. Furthermore, borrowers who also have a transaction or savings account at the bank are more likely to refinance with the bank, suggesting higher switching costs.

Section 2, the bank sends a letter with two binding prolongation offers to borrowers who have not yet refinanced, around six weeks before expiration of the fixed rate period. We do not directly observe the content of these offers, but since they follow a standardized pattern, we can estimate what they would have looked like for any given borrower.

For a passive borrower, the counterfactual refinancing amount is the *contractual* residual balance at expiration, that is, the remaining balance assuming no deviations from amortization schedule. Borrowers then receive one offer with a fixation for the remaining loan maturity, and a second with a shorter fixation period. For instance, if the remaining maturity is 10 years, the bank offers a 10-year loan with a 10-year fixation and a 10-year loan with a 5-year fixation. Since borrowers may have time-invariant preferences for longer or shorter fixation periods, we assume that they select the same fixation length on the prolongation offer as on the expiring loan, when available.

Constructing the passive counterfactual also requires knowledge of the interest rate that would have applied to such a prolongation originated at the end of the fixation period. To determine the offered rates, the bank applies a proprietary pricing function designed to ensure a target profit margin, which depends on observable loan attributes (term and fixation period) and the prevailing market conditions at the time of the offer. Crucially, the offered rates are not tailored to individual borrower characteristics. However, because the bank provides only a high-level description of its pricing function, we cannot replicate the offer exactly. We therefore use a random forest model on the 38,933 prolongation loans in our sample to predict the rates for the counterfactual.[21] The inputs for the prediction are month of origination, principal, term and fixation length. Note that the set of observed prolongations includes both borrowers who accepted the bank's default offer and those who renegotiated the terms and rate with the lender. In Appendix B, we provide further details on the estimation of these counterfactuals and we show that our predictions closely match the rates on realized passive prolongations.

Actual vs. counterfactual payments Panel B of Figure 4 shows the average realized change in monthly payments upon refinancing (red line) alongside the hypothetical average change if borrowers had just taken the standard prolongation offer by the bank (blue line). The gap between the two lines indicates that borrower actions explain why the increases in payments observed in Panel A are small for most borrowers. Payment increases starting in the second half of 2022 would have been significantly larger if borrowers had

[21] We use a random forest model because it achieves better out-of-sample predictive performance in an 80/20 sample split than OLS. However, the results that follow are similar if we use OLS for the rate estimation.

just passively rolled over their mortgage at rate expiration: we would have expected an average increase of 82 euros, but payments only increased by 20 euros on average. While not the focus of this paper, it is also notable that during the low-rate period 2018 to 2021, payments decreased little. This is also evident in Panel A, where the median and 75th percentile of payment changes are both very close to zero over the period 2018–2022.[22]

Decomposing impact on payments Actual monthly payments can deviate from counterfactual payments if the interest rate, loan term, or loan amount differs from the passive benchmark. The interest rate may differ if borrowers negotiate with the lender, anticipate refinancing (e.g., through forward agreements), or select a contract with a different fixation period. The loan term may change if borrowers extend or shorten the maturity at the time of refinancing. The loan amount may be reduced through voluntary repayments made during the fixation period (if contractually allowed) or at refinancing.

To assess the contribution to deviation of each action, we compute intermediate counterfactuals, varying only one component at a time. Let the passive counterfactual monthly payment be given by $f(L_0, r_0, T_0)$, where L_0 is the remaining loan balance, r_0 is the estimated passive rate, and T_0 is the residual term. We denote the actual new payment by $f(L', r', T')$, where L', r', and T' are the borrower's chosen loan amount, interest rate, and term, respectively. We define the individual effects as follows:

$$\begin{aligned} \text{Rate effect} &= f(L_0, r', T_0) - f(L_0, r_0, T_0) \\ \text{Term effect} &= f(L_0, r_0, T') - f(L_0, r_0, T_0) \\ \text{Amount effect} &= f(L', r_0, T_0) - f(L_0, r_0, T_0) \end{aligned} \tag{2}$$

Figure 5 plots the average effects by quarter of expiration along with the overall effect of borrowers' actions, that is, the difference between $f(L', r', T')$ and $f(L_0, r_0, T_0)$.[23] The average effect of term modifications is positive across the sample period, consistent with borrowers shortening maturities relative to the passive counterfactual and thereby increasing monthly payments. While still positive, the magnitude of this effect starts to decline for loans expiring in 2022 and thereafter, suggesting that maturity reductions be-

[22] This partly reflects that many borrowers, when able to refinance at a lower interest rate, speed up the amortization of their loan while keeping the monthly payment constant. The pattern is consistent with "monthly payment targeting" (Argyle et al., 2020) and we explore the drivers behind it in separate work.

[23] This exercise does not constitute an exact decomposition. Because mortgage payments are a nonlinear function, the individual effects do not sum to the full effect. For instance, the rate effect could be alternatively computed as $f(L', r', T') - f(L', r_0, T')$. While the two approaches deliver quantitatively different results, the qualitative conclusions remain unchanged.

came less frequent as interest rates began to rise. Interest rate effects play essentially no role until 2022 but then turn negative, indicating that borrowers obtain rates below those implied by the passive benchmark. Reductions in loan balances also contribute to lowering monthly payments, and this effect becomes slightly more pronounced after 2022.

We next provide regression evidence on specific actions. We ask how choices of the loan term, amount, and fixation depend on the change in mortgage rate faced at refinancing. We estimate the following model:

$$Y_i = \beta_0 + \beta_1(Rate_t^m - Rate_i^m) + \Gamma' X_i + \mu_t + \varepsilon_i, \tag{3}$$

where the dependent variable Y_i represents a particular loan choice at the time of refinancing. Our main explanatory variable of interest is $(Rate_t^m - Rate_i^m)$, the change in the market rate on a 10-year mortgage in the month of refinancing versus the month in which the borrower had taken out their original loan. We use the market-level change in rates rather than the change in borrower i's actual rate to reduce endogeneity concerns (although results are similar with the two approaches). X_i contains control variables, namely the log residual loan amount at expiration (assuming no prepayments), the term and fixation period of the expiring loan, whether a borrower has an account with the bank, age of the borrower, and dummies for whether the mortgage is to a couple or (if not) a single male. Some specifications also include month-of-refinancing fixed effects (μ_t) to study loan choices within borrowers who refinance at the same time, but took out their previous loan at different times, leading to variation in their original rate.

Table 4 reports the results. In Columns 1–3, the dependent variable is the difference between the term of the new loan (T') and the term of the passive counterfactual (T_0).[24] The significantly positive coefficient on the market rate change indicates that indeed borrowers who refinance when interest rates have increased compared to loan origination are less likely to reduce the term of the loan. This result is robust across different specifications: without controls (Column 1), with loan- and borrower-level controls (Column 2), and with month-of-refinancing fixed effects (Column 3). A one-percentage-point increase in the market rate leads the new loan to have a 6.5–8.5-month longer maturity.

Columns 4–6 report estimates for loan balance adjustments. The dependent variable

[24] On average, borrowers reduce the term by more than two years when they refinance internally over our sample period, but with substantial time variation (see Panel A of Figure A.3). Before 2022, half of the internally refinanced loans reduced the term by at least one year. Since 2022, this fraction dropped to around 20%, with more borrowers leaving the term unchanged and a small fraction extending it.

is an indicator for substantial balance reductions, defined as a decrease of more than 5% of the original loan amount. Borrowers who refinance when market rates have increased are slightly more likely to reduce their loan balance upon refinancing—by about 0.3 to 1.2 percentage points per percentage point of rate increase, relative to a mean balance reduction propensity of 14%. This behavior is consistent with borrowers looking to avoid a large increase in monthly payments or to reduce total interest costs.

Finally, we study the choice of the fixation length of the new loan (which averages 7.5 years). Column 8 reports a slightly shorter fixation period when market rates have increased and we control for both loan- and borrower-level characteristics.[25] The sign on the rate-change coefficient turns significantly positive once we include month-of-refinancing fixed effects (Column 9), suggesting that the shorter fixation chosen after rates increased may reflect aggregate factors rather than individual circumstances.

3.4 Summary

To summarize, the patterns in the bank data suggest that borrower choices with respect to the refinancing of their loan are sensitive to the evolution of market interest rates. When rates increased rapidly in 2022, many borrowers took action to lock in a rate on their new loan that remained below or close to their old one. Furthermore, after rate increases, borrowers are less likely to reduce the term on their loan, and more likely to reduce the loan balance. They also choose shorter fixation periods. The combination of these actions allows them to reduce the impact of higher market rates on their monthly payments.

At the same time, it is still the case that many borrowers do not appear to take any action until the expiration of their existing loans, although we are limited in our ability to observe external search and refinancing with other providers. Furthermore, based on the bank data, it is impossible to disentangle different factors leading to borrower action or inaction—for example, (in)attention, financial sophistication, risk aversion, or variation in liquid savings that can be used to adjust the loan at refinancing or deal with higher payments. To better understand these factors, we next turn to a survey of borrowers and an experimental intervention to potentially change their information set.

[25] The reduction in fixation periods is already evident in the raw data, as shown in panel B of Figure A.3.

4 Survey

In this section, we present the survey conducted on a subset of the partner bank's mortgagors. Section 4.1 describes the design of the survey. Section 4.2 discusses survey administration, sample selection and representativeness, and reliability of responses. Section 4.3 focuses on respondents' beliefs about mortgage rates and preparation for rate changes. Section 4.4 studies respondent behavior in a hypothetical refinancing situation.

4.1 Survey design

The survey consists of three sections: a pre-vignette section on beliefs about mortgage rates and preparing for the possibility of higher future rates; a vignette section in which respondents confront a hypothetical refinancing situation; and a post-vignette section on economic beliefs and preferences, household finances, and demographics. Appendix C contains the survey questions translated from German to English.

Pre-vignette section We begin with questions related to mortgage interest rates. The first asks qualitatively about how rates have changed over the past three years, and how this impacts respondents' financial situation. We then elicit point estimates of current and future rates as well as a qualitative measure of uncertainty about future rates. Starting the survey with questions about mortgage rates allows us to test for effects of our letter intervention (described in Section 5) without the risk of priming respondents.

Respondents then answer questions about their preparation for a future rate change at the end of the rate-fixation period. We first ask whether respondents prepare for the expiration of their fixation period and the potential refinancing. Depending on the response, they are asked to explain how and why they already have prepared or plan to do so. If they do not prepare, they are also asked why. The response is in an open-text format, which provides a snapshot of what is on top of respondents' mind and avoids priming on a specific set of response options (e.g., Haaland et al., 2024). We also ask about the timing of preparation and expected monthly payment changes.

The final question in this block is on whether respondents have received a letter on mortgage-rate increases from their bank over the past two months.[26] We offer four response options: (i) no letter received, (ii) letter received but not read, (iii) letter received

[26] We refer to rate increases in the question to be specific about which letter we have in mind, but avoid details on the letter content, which might confound subsequent responses.

and read, (iv) do not remember. The question is important because we can study directly how many and which respondents state that they read the letter, allowing us to tell apart ex-ante informedness from not reading the letter if we find no effects. We can also use the share of readers to "rescale" any treatment effects.

Vignette section The second part of the survey contains the vignette. Respondents imagine they have a €100,000 mortgage that needs refinancing in one or three years, with the interest rate increasing to 3.5% (from a level of 1.5% or 3%). We then ask how likely they would be to take the following actions to prepare for the rate reset: (i) meet an advisor from their current lender, (ii) compare loan offers from different lenders, (iii) reduce the mortgage balance, (iv) lock in the future interest rate before the reset, (v) reduce their expenses, and (vi) increase their income. Following (i) and (iii), structured questions get at their reasoning. Finally, respondents choose a fixation period for the new loan.

There are two main reasons for integrating the vignette into the survey. First, the hypothetical scenario applies to everyone, so all respondents make hypothetical choices and convey the reasoning behind them. In reality, instead, mortgage setups are very heterogeneous. This heterogeneity makes it difficult to have enough respondents elaborate on each action. The second, related reason is that the hypothetical loan mitigates idiosyncratic factors that contribute to noise, such as the size of the loan. The structured questions about the hypothetical refinancing situation also complement our open-ended question about the preparation for borrowers' real-world refinancing.

We randomly assign each respondent to one of three vignette variants. All three cover the €100,000 mortgage that will reset to a 3.5% interest rate. In the baseline scenario, the current rate is 1.5% and the reset is one year away. We choose this scenario because respondents face a realistic rate increase of two percentage points. Moreover, the fixation ends soon, so respondents should care about the reset. In the second vignette, the distance to the reset increases to three years. We choose the greater distance to reset because of its empirical regularity and to gauge the sensitivity of preparation to the reset distance. In the third vignette, we reduce the rate hike by setting the current rate to 3%. This variant speaks to the role of the size of the rate increase. We hold constant the future rate across scenarios to mitigate concerns about beliefs about general-equilibrium effects.

Post-vignette section The third part of the survey elicits additional respondent characteristics and beliefs. Specifically, we cover risk tolerance as a driver of exposure for interest-rate risk (e.g., Campbell and Cocco, 2003); debt aversion; beliefs about the current lender (e.g., Johnson et al., 2019); recent consumption-savings decisions, which we

observe only for a subset of mortgagors in the bank data; and financial literacy. Finally, we ask about the household balance sheet and income, educational attainment, and the perceived direct effect of an unexpected increase in interest rates on various economic outcomes. These beliefs might capture sentiment about rate changes more broadly.

4.2 Survey administration, sample selection, and representativeness

Survey administration We run the survey in partnership with the same German bank, allowing us to combine bank data, letter RCT, and survey for the same set of mortgage customers. In November 2024, the bank sent a short email to around 46,000 customers, inviting them to participate in a survey on mortgages run by Goethe University Frankfurt. The bank sent a reminder email 1.5 weeks after the initial invitation. The survey remained open for 2.5 weeks. Overall, 2,004 customers complete the survey. The response rate is 4.3%, which is slightly above other surveys of the bank. The median response time is 14.2 minutes. Participants receive a €10 online-shopping voucher for survey completion.

Sample selection We set minimum restrictions for survey participation: all customers with a mortgage who consent to receiving emails from the bank get the survey invitation. Among those who complete the survey, we omit the respondents who take less than six minutes (around 1.5% of the sample) and more than 120 minutes (around 0.5%). This step leaves 1,958 respondents in the baseline survey sample.

Sample representativeness We compare our survey sample to the average mortgagor in the bank data (see Section 3.1) and the Bundesbank's PHF to speak to representativeness. Table A.1 shows summary statistics on each sample. Comparing the PHF mortgagors with the mortgagors from our partner bank who complete the survey, we find they are of roughly similar age, but our sample, on average, is better educated and has higher household net income. Mortgage characteristics are in the same ballpark; for example, the current amount is slightly higher and the payment is slightly smaller in our sample. Comparing the bank samples, mortgagors invited to the survey and particularly those who complete it are younger on average and more likely to be male. Mortgages are larger in the survey sample than in the full bank sample (current amount: €176k vs. €148k), though the collateral value is smaller. Most noticeably, survey respondents tend to have a closer relation to the partner bank. For example, 61% of respondents also have a checking account with the bank, whereas only 41% of all mortgagors do. Overall, mortgages in our survey sample are broadly comparable to representative mortgages, but our sample

is positively selected in terms of education and income, and we document selection into the survey based on the customer relation to the bank.

Importantly, receiving the letter as part of our RCT does not affect the propensity to participate in the survey—see Table A.2 for regressions of participation indicators on letter dummies with and without additional controls.

Reliability of survey responses We try to alleviate possible concerns about inaccurate reporting in our survey by testing for the reliability of responses using bank data (Dutz et al., 2022; Schnorpfeil et al., 2023). Table A.3 shows plausible associations between choices we observe in the bank data and choices as part of the hypothetical refinancing situation. Specifically, respondents who have made prepayments, that is, voluntary, extra payments, are more likely to state they would likely prepay in the vignette; forward and Bausparen loans in the bank data predict a forward-loan preference in the vignette; and forward loans—which imply locking in rates early—and rate-fixation periods in the bank data explain the fixation choice in the vignette.

4.3 Beliefs about interest rates and preparation for rate changes

Interest rate perceptions and expectations Figure 6 reports statistics for respondents' beliefs about mortgage rates.[27] The first stacked bar from the left shows beliefs about how mortgage rates have changed relative to three years ago (in 2021), which we elicit on a five-point scale ranging from "today's rates are much lower" to "much higher." 83% of respondents believe mortgage rates are somewhat or much higher than they were three years ago. Less than 10% of respondents perceive rates to have decreased.

The second bar documents the distribution of the perceived current rate on a new mortgage with a 10-year fixation period. We ask for a point estimate, in a question together with rate expectations. The median perceived rate is 3.5%. Dispersion is limited: 4% of respondents perceive rates to be below 2.5%, and 8% perceive rates of 5% or higher. Actual rates at the time of the survey in November/December are around 3–3.5%.[28]

The third and fourth bars report mortgage-rate expectations. We ask for point predictions of rates in two and five years, which we contrast with perceived current rates,

[27] We study beliefs of all respondents, including letter recipients, because the letter treatment does not have significant effects on interest-rate beliefs on average, as discussed in Section 5.2 below. Nonetheless, all regression analyses in this section control for letter-group dummies.

[28] We state an average effective rate of 4% on new mortgages in the letter, based on Bundesbank data from July, the latest available data. Rates had fallen between then and the survey date.

respectively. Expected rates are close to the perceived rate on average. 14% of respondents expect rates in two years to deviate more than one percentage point from their current perception. The five-year median expectation is similar to the median perceived current rate, but dispersion in the forecast increases. In sum, most respondents are aware of the increase in interest rates over the past years, have accurate perceptions of current mortgages rates, and expect rates to remain at a similar level.

Preparation for rate reset We next study whether and how mortgagors prepare for the future interest-rate reset. To focus on respondents subject to rate risk, we require at least €10,000 expected debt at reset, excluding home-savings contracts. We develop a coding scheme that classifies the open-text responses into nine categories and apply the scheme using both a human coder and a large language model (GPT-4o). 79% of responses can be classified into at least one category, in line with existing work (e.g., Link et al., 2025).

Figure 7 plots the categorized open-text explanations of whether and how mortgagors prepare for the rate reset. 18% of borrowers select that they do not prepare (top-left panel). Among them, 22% explain they will actively pay off (prepay) their loan, which could also be interpreted as a preparation. 26% say they repay without mentioning active repayment.[29] That is, nearly half of respondents who do not prepare will repay their loan at the end of the fixation period. 6% do not prepare because they perceive the outstanding loan to be small. 30% state they take no action, at least until they are close to the reset.

44% of borrowers plan to prepare in the future (top right panel). Among them, the most common form of preparation is information acquisition (63% of responses), which for many borrowers entails searching for the best loan offers or consulting a mortgage advisor. Apart from that, some respondents consider fully or partially paying off the loan (11% respectively), locking in the future mortgage rate ahead of the rate reset using a forward loan or Bausparen (13%), or increasing savings (20%).

38% of borrowers state they have prepared already (bottom left panel). There is more heterogeneity in how they prepare. A significant fraction has locked in their rate (38%), which is consistent with the surge in demand for forward loans once rates started to increase (Figure 3). Many borrowers fully (26%) or partially (12%) pay off their mortgage, which again aligns with actual behavior, such as the increased likelihood of loan-balance reductions (Table 4). 17% mention they have increased savings.

[29] Many of these answers are ambiguous (such as "loan will be fully repaid"), so they could indicate active or natural repayment. Natural repayment should not happen given the minimum-debt restriction we impose. Some responses indicate natural repayment nonetheless, but the overall fraction is small (<5%).

Finally, we plot the frequency of categorized responses for borrowers pooled across types of preparation (bottom right panel), which illustrates the heterogeneity in how borrowers prepare: they rely on (partial) repayments, locking in interest rates ahead of the reset, increased savings, and acquiring information. Overall, the open-text explanations on preparing for higher future interest rates indicate most borrowers actively prepare, often taking steps to mitigate the payment impact of higher rates.

4.4 Hypothetical refinancing situation

Refinancing choices Figure A.4 documents the actions respondents would take in the baseline scenario of a hypothetical €100,000 mortgage with an interest rate of 1.5% that resets in one year to a rate of 3.5% (vignette 1). Most noticeably, 71% of respondents state they would "very likely" compare loan offers from multiple lenders, and 16% would "rather likely" compare offers. Relatedly, 78% would likely meet an advisor from their current lender. Prepayments of any form are common as well (71% would likely prepay), consistent with their prominence in the bank data. We find similar likelihoods of reducing expenses, raising income, and taking out a forward loan, of around 47%. Respondents would hence consider various actions to prepare for the higher-rate reset.

Varying the refinancing situation We then turn to between-respondent effects of varying the hypothetical refinancing situation. To ease the interpretation of the effects, the outcomes are indicators equal to one if an action is very or rather likely, and zero otherwise. Because we randomize assignment into the vignettes, controls help with precision but have no material effect on the estimates. Nonetheless, we include a wide array of controls from both the survey and bank data, listed in the table notes.

Table 5 shows the results. First, we study how increasing the distance to reset from one year (vignette 1) to three years (vignette 2) affects the likelihood of action over the next 12 months. A reset in three years reduces the likelihood of consulting a bank advisor by 15 percentage points (20%) and searching for loan offers by six percentage points (7%). Respondents are also six percentage points (or 12%) less likely to reduce expenses and seven percentage points (15%) less likely to try to raise income. However, a later rate reset does not affect the likelihood of prepayments—for which we do not reduce the choice horizon to 12 months in vignette 2—and taking out a forward. The results indicate respondents become more active as they approach the rate reset.

Second, varying the size of the hypothetical increase in interest rates at reset matters for choices as well. Specifically, vignette-3 respondents confront a smaller rate increase, from 3% to 3.5%. This smaller increase lowers significantly the likelihood of consulting a bank advisor by five percentage points (6%) and of raising income by six percentage points (12%). Instead, vignette-3 respondents are 10 percentage points (21%) more likely to lock in the 3.5% already using a forward loan. The results corroborate that borrowers are sensitive to increases in interest rates, in particular in the context of locking in the post-reset interest rate early.

We also ask for how long respondents would want to fix the new 3.5% interest rate, with possible options of one, five, 10 years and "as long as possible." We define a dummy equal to one for those that select 10 years or longer. The last column of Table 5 shows that in vignette 3 (smaller rate increase), respondents are about six percentage points (11%) more likely to choose such a long fixation, suggesting they are less willing to lock in a rate for a long time when that rate represents a larger increase to their old rate.

Reasoning behind choices We document how respondents in vignette 1 reason about their hypothetical refinancing choices.[30] Figure A.5 is on meeting an advisor from the current lender. For the 78% of respondents who would likely arrange a meeting, the most important reasons are to negotiate a better mortgage deal and better understand mortgage options (Panel A). The remaining 22% who are unlikely to meet often state they are well-informed already or want to acquire information themselves (Panel B).

Figure A.6 reports on the reasons for (not) making prepayments, defined as voluntary, extra reductions in the loan balance. 71% would likely prepay, mostly to reduce the impact of higher interest rates on payments, particularly the interest burden (Panel A). This finding is consistent with the limited passthrough from higher rates to payments we observe in the bank data (Figure 4). The 29% unlikely to prepay mostly subscribe to reasons based on opportunity costs: they have other priorities for their savings (e.g., durables purchase) or prefer to invest their savings differently (Panel B).

[30] Effects of varying the hypothetical refinancing situation on reasoning are insignificant. The single exception is that respondents who confront a smaller rate increase (vignette 3) are more likely to view "tolerating higher monthly payments due to higher rates" as an important reason for being unlikely to prepay.

5 Letter RCT

In this section, we present results from the letter experiment. Section 5.1 describes the letter objective, sample, and content. Section 5.2 and Section 5.3 present results of the letter intervention. Section 5.4 explores selection into reading the letter.

5.1 Letter setup

We ran an RCT in November 2024 in which the partnering bank sent a letter to a random subset of mortgagors. The letter reached recipients approximately two weeks before a subset of them received an email invitation to participate in the survey. We designed the letter, but the bank sent it, with official letterhead and signature. The letter features information about the recent increase in market interest rates, how these rates might feed into monthly mortgage payments once a mortgage's rate resets (upon refinancing), and how borrowers can cope with higher rates.

Objectives We pursue two objectives with the letter intervention. First, in combination with the survey (see Section 4 above), we try to understand mortgagors' awareness of mortgage rates and how these rates translate into monthly payments. Second, we aim to assess how treatment-induced awareness of the potential increase in mortgage rates and hence required payments affects mortgagors' beliefs and choices.

Sample Three criteria need to be met to enter the sample of possible letter recipients. First, the customer must have consented to receiving promotional or informational letters from the bank. This consent applies to non-mandatory communication, such as marketing content. The bank sends official communications via standard mail, as required by law. Second, we require the customer to have a mortgage originated before June 2022. We thereby focus on borrowers not yet subject to higher mortgage rates. Third, the expected mortgage amount at the end of the interest-rate fixation period needs to be at least €10,000. This restriction excludes borrowers not subject to significant interest-rate risk. Among the 150,000 active mortgagors, 48,000 mortgagors fulfill the criteria. The first and third criteria contribute the most to the drop in the number of mortgagors.

We randomly divide the sample of possible letter recipients into four equally-sized groups. Three groups receive different letter variants, as explained below, and one control group does not get any letter. We vary some of the letter contents across groups, similar

to Byrne et al. (2023), to study whether specific letter features drive effects, if any, while still being able to pool together all recipients. Table A.4 documents the four groups are largely well-balanced for a wide array of loan and borrower characteristics.

Content The letter comprises four sections (see Appendix D). We strive for brevity and clarity throughout to minimize costs of engaging with the letter content (Stantcheva, 2023). In the first section, we state that market interest rates have increased substantially since early 2022. We then explain that the bank collaborates with Goethe University Frankfurt to understand how borrowers respond to the rate increase and that as part of this study, the bank would like to provide their customers with relevant information. We then add a figure, shown in Panel A of Figure A.7, that illustrates the recent surge in mortgage rates, making it a salient feature of the letter.[31]

The second section states that the current average interest rate on new mortgages in Germany is 4%. This statistic is for July 2024 and reported by Bundesbank in September; it is the latest information available before printing the letter. We explain prolongation interest rates might differ from this rate, depending on unpredictable market developments. We then cite a Bundesbank study that shows large heterogeneity in interest-rate expectations of German households. This part on future rate uncertainty is not included in letter variant 2, which allows us to assess whether this part drives effects.

The third section sketches how higher interest rates can impact monthly payments. We explain that an increase in rates by two percentage points on a €100,000 loan initially raises interest expenses by €2,000 per year or €167 per month. We embed the numbers in a small graphic that makes them more salient to the reader. The graphic is in Panel B of Figure A.7. This section is not included in letter variant 3 to gauge whether information about concrete payment changes matters.

The fourth section lists options to cope with higher interest rates. We mention (i) voluntary deleveraging through annual partial repayments (Sondertilgungen) or repayments at reset, (ii) locking in future interest rates using a forward loan or a home savings contract (Bausparen) to have certainty about future payments, and (iii) increasing savings to be able to afford higher future payments. The letter concludes by noting that the bank would be available to advise what actions might be best.

[31] The partner bank asks us not to show the original letter, so letter graphics are separate from the text.

5.2 Letter effects in survey data

We use the survey to report the extent to which the letter reaches its recipients and affects beliefs about interest rates and the prolongation. Respondents not eligible to receive the letter are not in the sample, which reduces its size to 882. Table A.2 shows that the letter does not affect selection into the survey, mitigating concerns possible differences in survey responses across letter groups reflect selection effects. We include a parsimonious set of controls given randomized treatment assignment and the possibility of disparate letter effects: log age, obtaining university education, indicator for vignette assignment if the outcome variable is from the vignette section, and household net income from the survey; log total debt outstanding, as well as indicators for which loans are active, living in East Germany,[32] meeting an advisor (past 12 months), and online-banking login (past month) from the bank data, measured prior to the intervention in October 2024.

Table 6 reports the results. Column 1 captures whether respondents state they have read a letter from their lender over the past two months concerning mortgage-rate increases. Letter provision increases the probability of reporting to have read a letter by 30–37 percentage points, depending on the letter variant. We cannot reject the null of identical treatment effects across letter variants. In the control group, 12% report to have received and 8% to have received and read a letter, as the bank regularly sends out marketing and contract material.[33] While it may seem obvious that many letter recipients state they have read our letter, being able to quantify this is helpful for "rescaling" any measured treatment effect: we can multiply estimated regression coefficients on letter dummies by a factor of three when trying to assess the actual effect of reading the letter.

Columns 2–3 show insignificant letter effects on beliefs about mortgage rates. We ask for the perceived mortgage-rate change over the past three years on a five-point scale, from "much lower" to "much higher," and the point estimate of the current rate on a new mortgage in Germany with a 10-year fixation period.[34] For the latter, we define an indicator equal to one if the estimate is 3–4%. We treat estimates within that range as accurate: as we explain above, whereas the letter states the current average rate is 4%, rates had fallen to 3–3.5% at the time of the survey. Insignificant letter effects suggest high

[32] A large literature documents that vast social and economic disparities still delineate the Iron Curtain; see, for example, Alesina and Fuchs-Schündeln (2007); D'Acunto, Schnorpfeil, and Weber (2022); Laudenbach, Malmendier, and Niessen-Ruenzi (2020); and Schnorpfeil and Johanning (2021).

[33] The effect on reporting to have received a letter, including cases of not reading it, is 33–38 percentage points.

[34] The letter does not affect the first and second moment of expected mortgage rates either.

ex-ante awareness of mortgage rates.[35] Indeed, as we show in Figure 6, most respondents have well-calibrated rate beliefs. We explore in Section 5.4 below whether selection into who reads the letter further limits the scope for learning about mortgage rates.

Column 4 presents letter effects on expected changes in monthly payments upon refinancing. We ask for euro-amount changes (in buckets of 50) if respondents expect a change; the change is zero if they expect payments to remain roughly the same (42% of respondents); and we exclude respondents who report they will not need to refinance. We scale the expected payment change by the current payment. The letter does not affect expectations about payment changes, despite explicitly outlining how higher rates can feed into payments. Insignificant effects are consistent with high ex-ante awareness.

Columns 5–8 document letter effects on awareness of and hypothetical choices involving prepayments and forward loans. We elicit awareness on a four-point scale spanning "completely unknown" to "completely known." The letter increases awareness of both prepayments and forwards by about 0.15 standard deviations, although statistical significance is marginal. The likelihood of prepaying as part of the hypothetical refinancing situation described earlier is also positively affected, while the same is not the case for the likelihood of taking out a forward.

In sum, the survey-based results indicate that, although letter recipients do not differentially update beliefs about mortgage rates and payment changes, the letter does shift awareness about mortgage-related features, suggesting that borrowers may otherwise be imperfectly aware of them.

5.3 Letter effects in bank data

We next examine effects of the letter intervention on borrowers' realized actions using bank data. The sample ends in May 2025, allowing us to observe actions over six months after the treatment. Theoretically, borrowers could respond in several ways: by acquiring more information (e.g., by contacting a bank advisor or search for offers from other providers), locking in rates early (if possible), making additional loan repayments (if possible), or increasing their savings.

[35] We follow the existing literature that uses the extent of learning from exogenously provided information as a measure of attention and knowledge (see, e.g., Weber et al., 2025). We also find no significant effects if we instead use the perceived level of the mortgage rate (winsorized) as dependent variable.

We study whether letter receipt causally led to such responses by relying on different proxies we can observe in the bank data and that we use as outcome variables in our regressions: (i) having at least one meeting with a bank advisor; (ii) refinancing (with different sub-categories—in particular, "early refinancing" more than five weeks prior to expiration of the existing fixation or refinancing right after meeting an advisor); (iii) making extra partial prepayments; (iv) entering a forward or home savings contract.

In each case, we first regress the outcome on a letter dummy (pooling the different letter variants), and relevant borrower- and loan-level controls, including expiration-year fixed effects.[36] We then further study heterogeneity in treatment effects by interacting the letter dummy with indicator variables for different distances to expiration. Specifically, we distinguish between borrowers whose existing fixation expires (i) by May 31, 2025 (when our bank data end); (ii) June 1, 2025 to May 31, 2027; (iii) June 1, 2027 to May 31, 2029; and (iv) after that. The idea of this grouping is that borrowers in the first group have to take some action as otherwise they will transition to an expensive variable rate. The borrowers in the last group cannot enter a refinancing or forward yet. In between, borrowers could enter a forward or in some cases a regular refinancing. In total, our sample features 46,846 borrowers, of which 2,154 borrowers are in group (i), 7,680 in group (ii), 7,601 in group (iii), and 29,412 in group (iv). In total, 11,712 borrowers are in the control group, meaning they did not receive a letter.

Panel A of Table 7 presents the results from the specification with a single letter dummy (without heterogeneity by expiration time). Point estimates of the letter's treatment effects on the different actions are all positive but not statistically significant, with the exception of the outcome *Meet and open*, which equals one if a borrower met with an advisor and refinanced shortly thereafter; letter receipt increases the probability of this happening by 0.2 percentage points, or about 10% of the mean, significant at $p < 0.1$.

The lack of significant average treatment effects is not surprising given that many borrowers in the experimental sample are far from the expiration of their fixed rate. Panel B of Table 7 shows that, only for borrowers who have come to the end of the fixed period during the six-month post-event window, we estimate positive and significant effects on advisor meetings and internal refinancing. Specifically, the letter treatment increases the probability of meeting with an advisor by 5.2 percentage points, refinancing internally by 3.7 percentage points, and refinancing before receiving the letter offers from the bank

[36] The controls are: a loan's current interest rate, expected loan balance at expiration, borrowers' age, whether the borrower is a single male, and whether the borrower is a couple.

by 2.8 percentage points. In line with these results, we also find that the letter increases the probability of the joint outcome of meeting an advisor and originating a loan shortly thereafter. We do not find any significant effects on extra payments or the originations of home savings plans or forward loans.

These results indicate that for the select group of borrowers that have not taken action until close to expiration of their existing loan fixation, a letter providing information about the interest rate environment and possible ways to cope with a rate increase can incite action. This suggests imperfect awareness by these borrowers, and that interventions such as our letter could be helpful for such borrowers. Next, however, we discuss evidence that highlights the difficulty of reaching the borrowers with limited ex-ante awareness.

5.4 Selection into reading the letter

We explore selection into reading the letter, and whether this could possibly explain the limited letter effects, particularly on beliefs about mortgage rates. Table 8 reports heterogeneity in the propensity to read the letter by loan (Columns 1–3) and borrower characteristics (Columns 4–7). The dependent variable is one if the respondent states to have read a letter and zero for all other responses (no letter received, letter received but not read, does not remember). We regress the variable on an indicator for receiving any of our letters, which we interact with one of the loan or borrower characteristics.

We observe systematic heterogeneity in which borrowers read the letter. Borrowers with one-standard-deviation higher debt outstanding relative to the mean are seven percentage points (or 21%) and those who have engaged in past curtailments (Sondertilgungen) are 11 percentage points (35%) more likely to read the letter. Instead, the distance to the rate-fixation end does not predict the likelihood to read the letter. Borrowers whose self-reported financial literacy is above the median and those with above-median household income net of general expenses are 18 percentage points (76%) and 15 percentage points (60%) more likely to read the letter, respectively. Finally, letter recipients who correctly perceive mortgage rates to have gone up since 2021 and the current mortgage rate to be 3–4% are 17 percentage points (88%) and 13 percentage points (57%) more likely to state to have read the letter, respectively. Thus, ex-ante awareness of the letter content determines the propensity to read, mitigating the potential of the intervention.

6 Conclusion

Based on a unique combination of loan-level data from a German bank, a survey of its borrowers, and a letter RCT, we study how borrowers prepare for and respond to changes in the interest rate on their mortgage. Our results indicate that borrowers are generally well-informed about the interest rate environment, and in many cases prepare well ahead of the expiration of their rate fixation. Their various actions mitigate the impact of rate changes on monthly payments, resulting in much smaller variation in payments than in a counterfactual world with passive refinancing.

Borrower awareness of the many options the German institutional setting provides is not perfect, however, as indicated by the significant effects of the letter RCT intervention on some survey responses and on the refinancing behavior of the selected subsample of borrowers that had not taken action until shortly before expiration of their old loan. Nevertheless, we interpret our findings as contrasting to some extent with many results in the literature that emphasize limits to borrower awareness and understanding. It is an interesting open question to what extent these seemingly different results reflect the time period studied (as inflation and rate increases attracted much attention in recent years) or the selection of households that own homes with a mortgage (since German homeownership is lower than in most other advanced economies).

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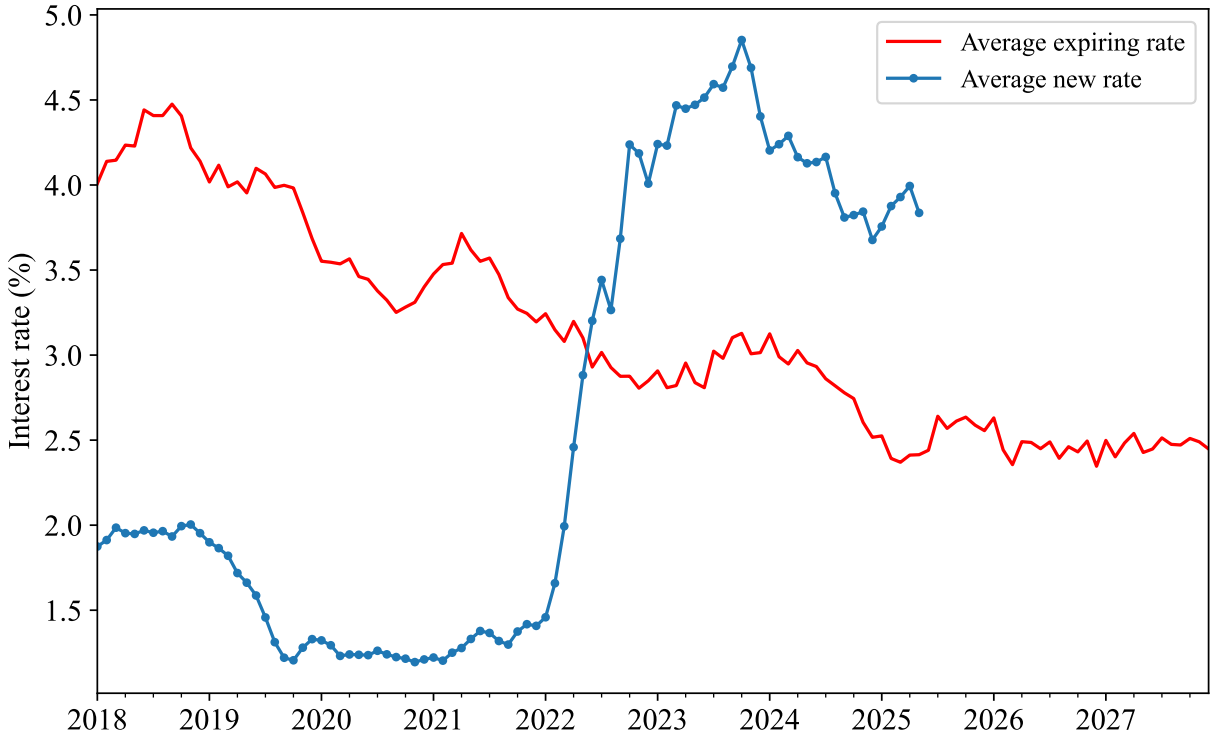
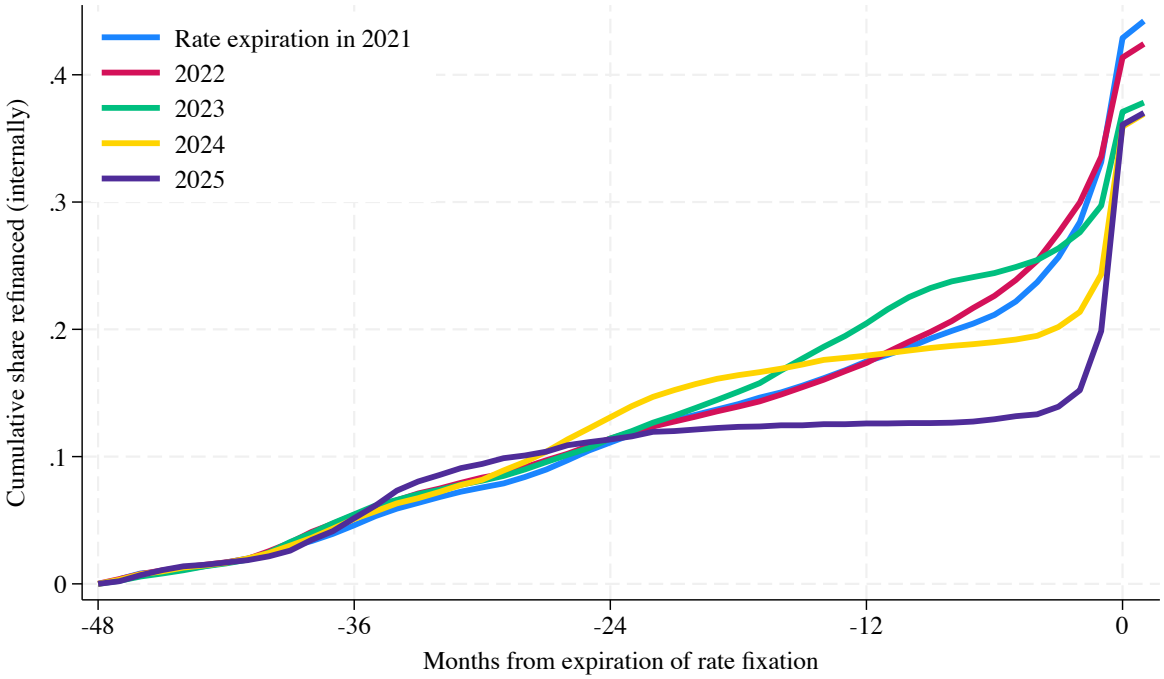
Figures and Tables

Figure 1: Rates on new and expiring mortgages at our partner bank



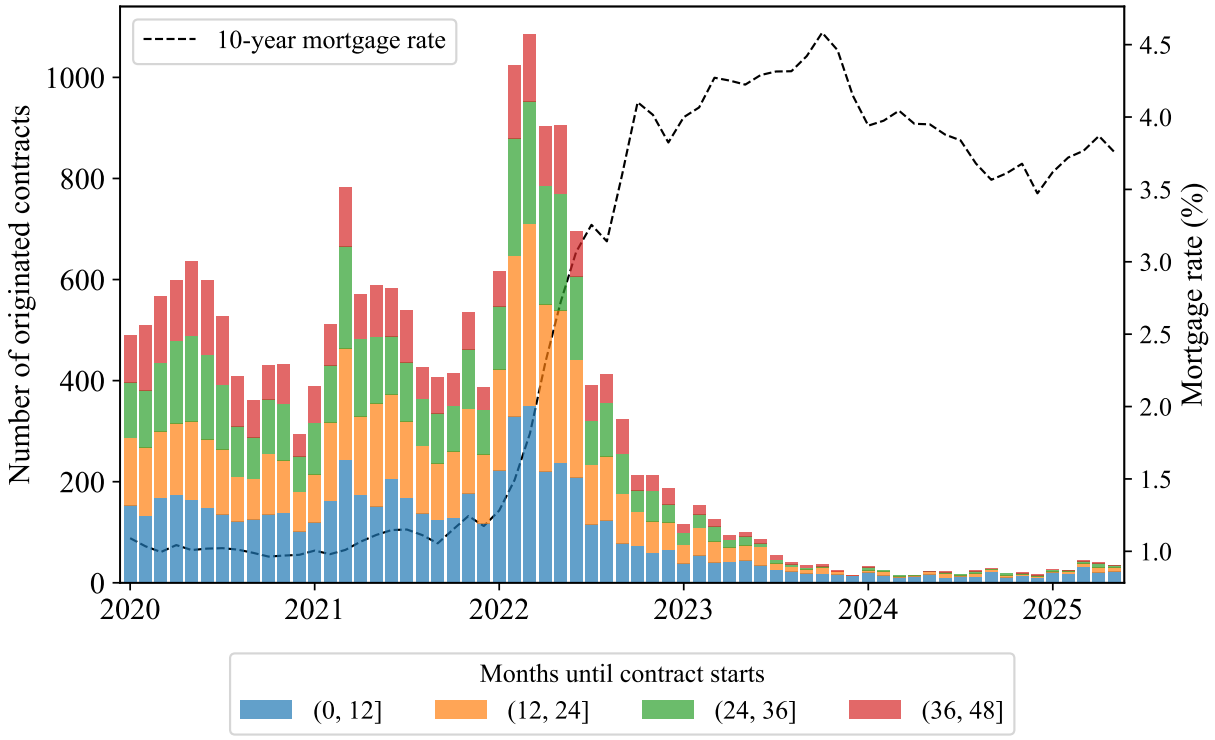
Notes: This figure plots mortgage rates at our partner bank over time. The blue dotted line shows the average interest rate (vertical axis) across the mortgages originated by the bank in a given month (horizontal axis). The red solid line plots the average interest rate across all mortgages originated by the bank with fixed-rate periods expiring in a given month.

Figure 2: Cumulative hazard of internal refinancing across rate expiration vintages



Notes: This figure plots the cumulative share of mortgages that refinance internally at our partner bank (either via a forward mortgage or a regular prolongation) as a function of distance from expiration of the existing rate fixation, separately for different rate expiration vintages.

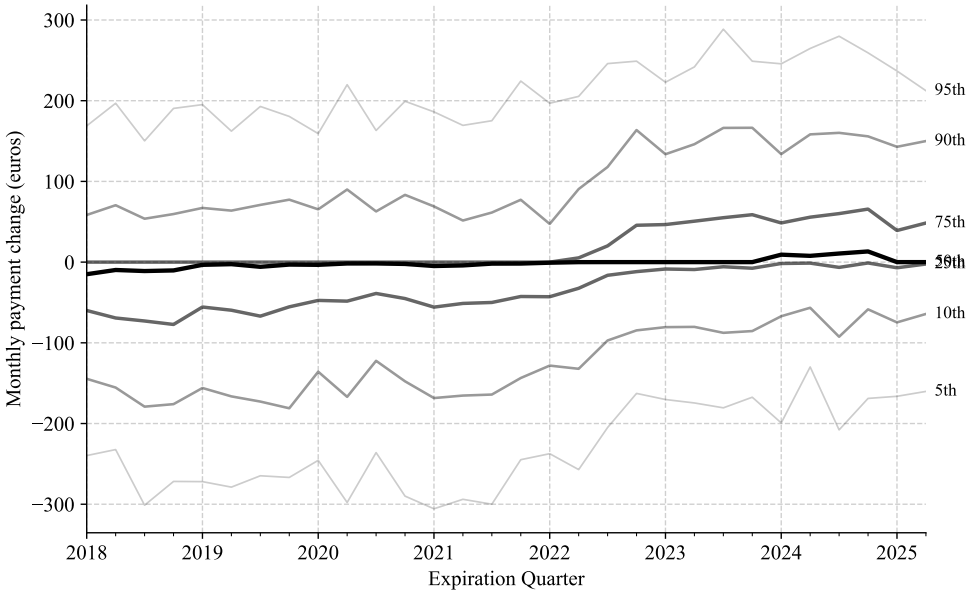
Figure 3: Origination of forward mortgages over time



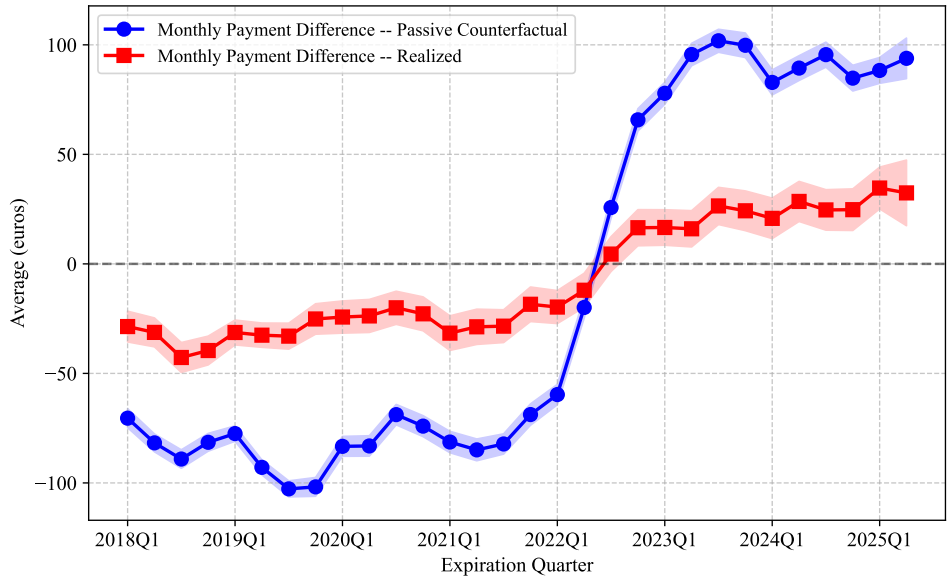
Notes: This figure plots the number of forward contracts by month of origination (horizontal axis) and number of months between origination and start of the mortgage contract (stacked columns). It also shows the evolution of the 10-year mortgage rate, computed as the average rate on newly originated 10-year fixed rate mortgages at the partner bank.

Figure 4: Changes in monthly payments following internal refinancing

A. Distribution of changes in monthly payments

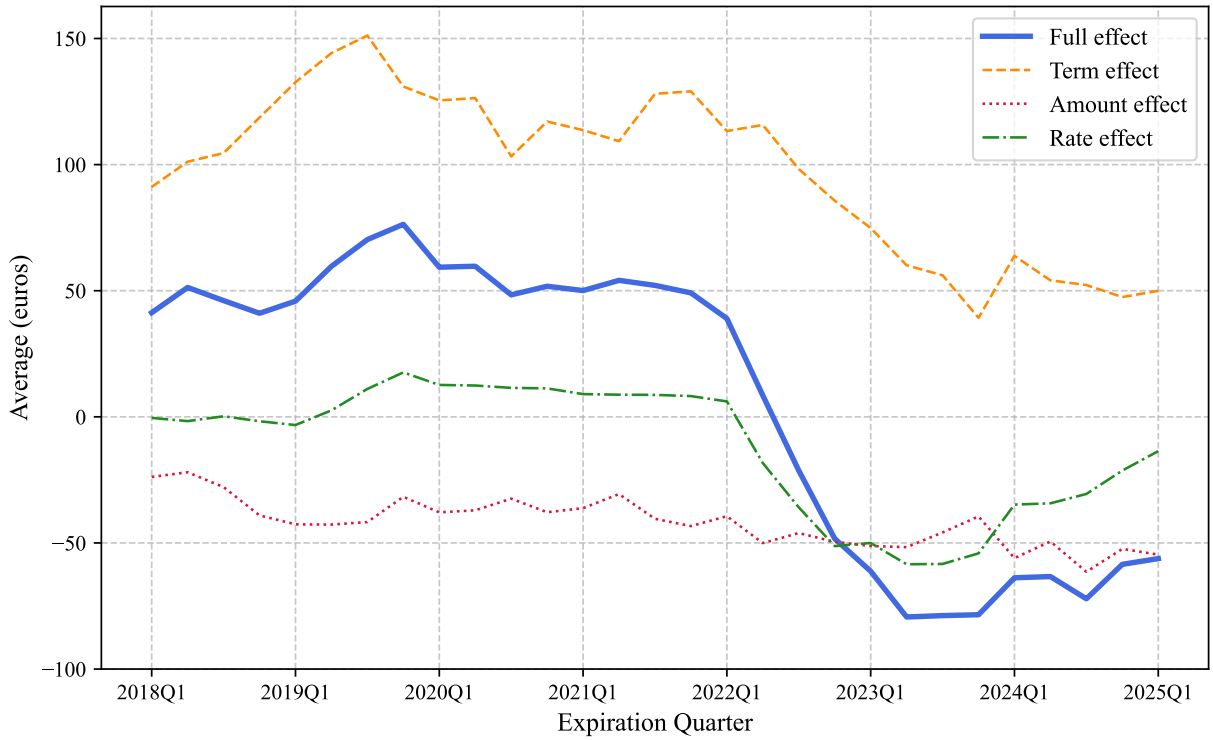


B. Average actual vs. counterfactual changes



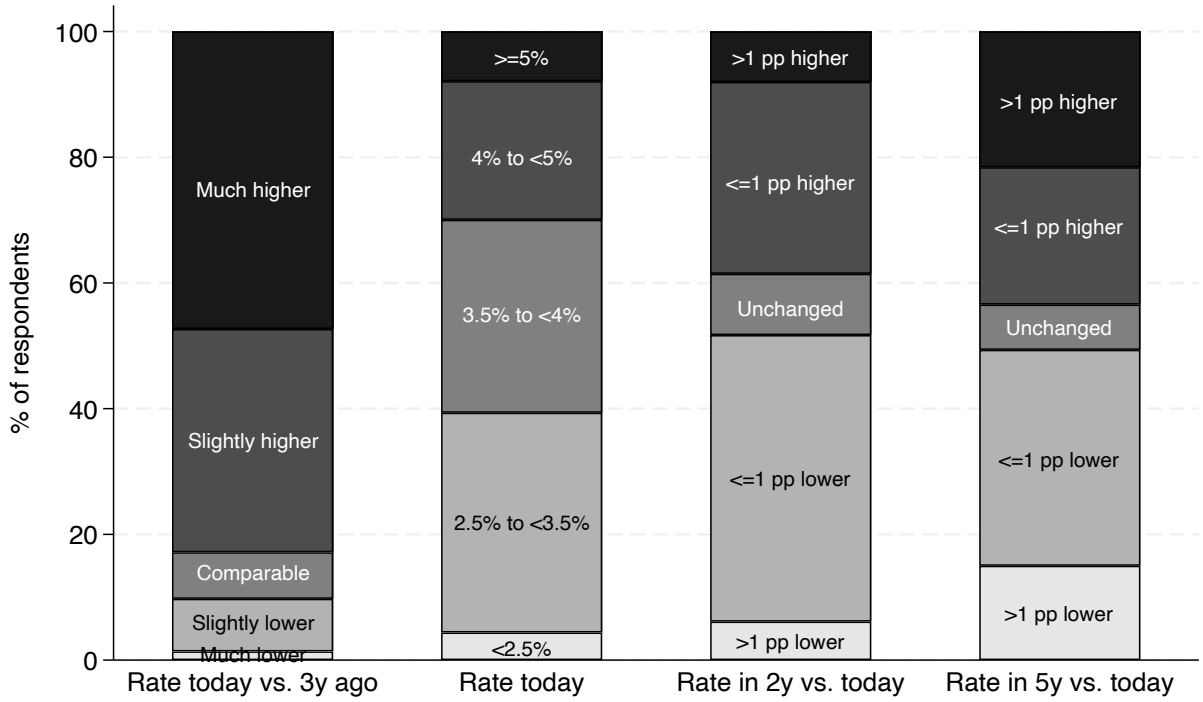
Notes: Panel A shows the actual changes in monthly payments for loans that refinance internally. Panel B shows the average actual change vs. the average change that would have taken place if a borrower had picked the standard prolongation offer by the bank.

Figure 5: Decomposition of contributors to mitigated change in payments



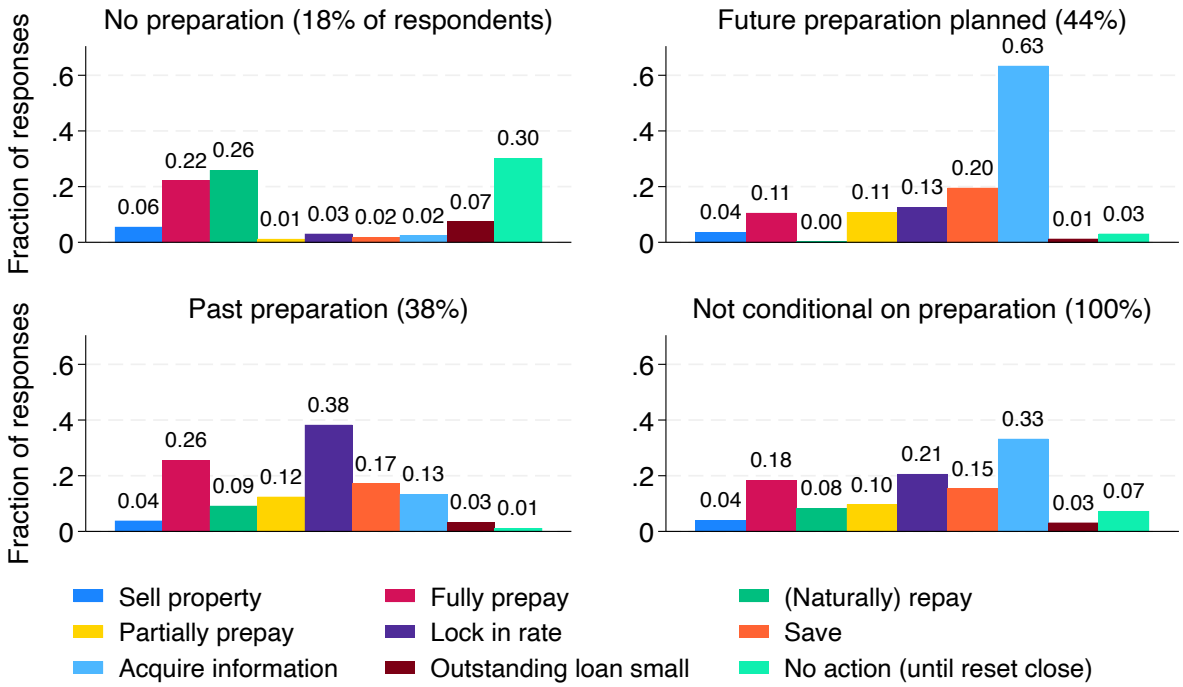
Notes: The thick blue line plots the average difference between actual monthly payments after refinancing and the estimated monthly payments in the counterfactual scenario where borrowers passively roll-over their debt at expiration of the fixed rate. The other lines plot the average effects of modification to the term of the loan, the loan amount and the interest rate calculated as defined in Equation 2.

Figure 6: Perceptions and expectations of mortgage rates



Notes: The figure shows the distribution of beliefs about mortgage rates. The first stacked bar chart from the left plots responses to "How do you estimate the current mortgage rate in Germany compared to three years ago (i.e., in 2021)?" The remaining three charts show beliefs elicited based on the question: "How do you estimate the current rate on a new mortgage with a 10-year fixation period? And which interest rates do you expect in the future?" We ask respondents for point estimates, which we group into five buckets each for illustrative reasons. For the last two charts, we subtract the perceived current rate from the expected future rate, respectively.

Figure 7: Frequency of preparation types for prolongation, from open-text responses



Notes: The figure shows the frequency of categorized open-text explanations of whether and how mortgagors prepare for the interest-rate reset of their mortgage. We restrict the sample to respondents with at least €10,000 expected non-Bausparen debt at reset and whose responses we can classify, reducing the sample size to 887. We split the sample into three groups: categorized responses of those who state they have not prepared and will not do so are in the top-left figure, those who plan to prepare in the future are in the top-right, and those who have already prepared for a future reset are in the bottom-left. We pool across types of preparation in the bottom-right figure. Classified responses fall into the following categories: *sell property*; *fully prepay* in case of active payoff rather than through natural amortization alone; *(naturally) repay* if the borrower mentions paying off the mortgage without alluding to active repayment; *partially repay* for active repayment that reduces but not eliminates the loan balance; *lock in rate* through Bausparen or forward mortgage; *save*; *acquire information*, e.g., by comparing bank offers or seeking advice; *outstanding loan small* as a reason for not preparing; and *no action (until reset close)* to indicate no preparation, at least until being close to the rate reset. Each response can fall into more than one category.

Table 1: Summary Statistics

Panel A. Loan characteristics	N	Mean	SD	P25	P50	P75
Original amount (€ k)	398,173	125.51	167.28	45.47	80.30	149.00
Outstanding amount (€ k)	398,173	84.98	136.99	21.11	45.74	96.54
Interest rate (%)	398,173	2.87	1.38	1.70	2.63	3.97
Fixation period (years)	398,173	10.93	4.56	10.00	10.08	15.00
Term (years)	398,170	19.40	9.64	10.83	18.42	26.75
Monthly payments (€)	398,173	684.57	910.38	300.00	498.00	800.00
Residual amount at reset (€ k)	398,156	79.22	127.77	14.02	45.00	99.53
Residual term at reset (years)	398,154	10.42	8.92	2.17	9.33	17.17
Forward loan (0/1)	398,173	0.27	0.44	0.00	0.00	1.00
Prolongation loan (0/1)	398,173	0.11	0.31	0.00	0.00	0.00
Allowed prepayments (%)	398,173	2.49	2.71	0.00	0.00	5.00
Panel B. Borrower characteristics						
Age	240,125	51.32	11.62	42.50	51.15	58.92
Years at bank	199,615	12.84	9.61	5.00	10.73	18.27
Male (vs. female or couple) (0/1)	240,314	0.25	0.44	0.00	0.00	1.00
Couple (vs. female or male) (0/1)	240,314	0.62	0.49	0.00	1.00	1.00
Deposits (€ k)	99,120	28.52	118.82	2.01	7.10	22.83
Total mortgage debt (€ k)	240,556	125.68	209.93	30.69	70.71	145.75
Total KfW debt (€ k)	32,970	53.74	60.91	32.22	43.80	70.64
Total Bausparen debt (€ k)	51,345	116.92	130.91	33.24	85.23	159.80
Has Bausparen w/o Vorfin (0/1)	240,556	0.13	0.31	0.00	0.00	0.00
Has brokerage account (0/1)	240,556	0.07	0.25	0.00	0.00	0.00
Advisor meetings (number, annual)	240,556	0.42	0.69	0.00	0.25	0.50
Simultanously active loans	240,556	1.29	0.61	1.00	1.00	1.29

Notes: This table presents summary statistics for the main variables in the bank data. The sample comprises 240,556 mortgagors with 398,173 distinct mortgage loans outstanding at some point between December 2017 and May 2025. *Interest rate* refers to the fixed interest rate valid during the *fixation period*. *Residual amount* and *residual term* are, respectively, the residual outstanding loan balance and residual maturity expected at the end of the fixation period assuming no deviation from regular payment schedule. For loans with fixation period longer than 10 years, the table reports the residual amount and residual term after 10 years since origination. *Allowed prepayments* is the maximum amount that can be prepaid each year, expressed as a percentage of the original principal (0%, 5%, or 10%). *Deposits* is the total balance in current and savings accounts at the bank, for customers who hold such accounts. *Total mortgage debt* is total outstanding regular mortgage debt over the sample period. *Total KfW debt* is total outstanding public-subsidy mortgage debt, for mortgagors with such loans. *Total Bausparen debt* is total outstanding Bausparen debt, for mortgagors with such loans. *Has brokerage account* is an indicator equal to one if the borrower has a brokerage account with the bank. *Advisor meetings* is the average number of times a borrower meets with a bank advisor in a year. *Outstanding amount* and all variables in Panel B are average values over the observation period. The remaining variables are static loan characteristics.

Table 2: **Loan Outcomes.** This table reports the number of loans in our sample by year of fixed rate expiration and by outcome. *Small* $< 10k$ refers to loans with residual balance at expiration lower than 10,000 euros. *Large* refers to loans with residual balance at expiration equal or larger than 10,000 euros. We restrict to loans with a fixation length up to 10 years and we impose that loans survive until 2 years before expiration.

Expiration Year	Total	Small (<10k)	Large (≥10k)	Large & internal refi			ongoing	Ratio forward/ prolongation
				total	*prolongation*	*forward*		
2018	25683	5370	20313	9551	5276	4275	318	0.81
		(20.9%)	(79.1%)	(47.0%)	(26.0%)	(21.0%)	(1.6%)	
2019	31491	6058	25433	11780	5816	5964	302	1.03
		(19.2%)	(80.8%)	(46.3%)	(22.9%)	(23.4%)	(1.2%)	
2020	21955	6153	15802	7262	3896	3366	180	0.86
		(28.0%)	(72.0%)	(46.0%)	(24.7%)	(21.3%)	(1.1%)	
2021	21400	6257	15143	6628	3428	3200	233	0.93
		(29.2%)	(70.8%)	(43.8%)	(22.6%)	(21.1%)	(1.5%)	
2022	22035	6488	15547	6517	2981	3536	226	1.19
		(29.4%)	(70.6%)	(41.9%)	(19.2%)	(22.7%)	(1.5%)	
2023	21798	6473	15325	5802	2245	3557	361	1.58
		(29.7%)	(70.3%)	(37.9%)	(14.6%)	(23.2%)	(2.4%)	
2024	18193	5841	12352	4025	1809	2216	2417	1.22
		(32.1%)	(67.9%)	(32.6%)	(14.6%)	(17.9%)	(19.6%)	
2025	15307	5408	9899	1087	3	1084	7947	
		(35.3%)	(64.7%)	(11.0%)	(0.0%)	(11.0%)	(80.3%)	
2026	11956	4685	7271	304	5	299	6686	
		(39.2%)	(60.8%)	(4.2%)	(0.1%)	(4.1%)	(92.0%)	
2027	10267	4052	6215	30	2	28	6166	
		(39.5%)	(60.5%)	(0.5%)	(0.0%)	(0.5%)	(99.2%)	
Total	200085	56785	143300	52986	25461	27525	24836	1.08
		(28.4%)	(71.6%)	(37.0%)	(17.8%)	(19.2%)	(17.3%)	

Table 3: Proportional hazard model of internal refinancing

	(1)	(2)	(3)	(4)	(5)
$R_t^m - R_i$	0.868***		0.845***	0.795***	0.842***
	(0.010)		(0.007)	(0.014)	(0.014)
ΔR_t^m		1.265**	1.701***	1.883***	
		(0.139)	(0.115)	(0.105)	
Outstanding balance (log)				1.069***	1.064***
				(0.014)	(0.014)
Remaining maturity (years)				1.030***	1.030***
				(0.001)	(0.001)
Rate fixation (years)				0.971***	0.968***
				(0.010)	(0.008)
Has bank account				1.176***	1.174***
				(0.012)	(0.012)
Borrower age				1.000	1.000
				(0.001)	(0.001)
Male (0/1)				0.981	0.979
				(0.020)	(0.020)
Couple (0/1)				0.967**	0.966**
				(0.016)	(0.016)
Vintage BH	No	No	No	Yes	Yes
Refi-month FE	No	No	No	No	Yes
Observations	3,563,166	3,563,166	3,563,166	3,561,715	3,561,715

Notes: $(R_t^m - R_i)$ is the gap (in percentage points) between the market rate on a 10-year mortgage at time t and the interest rate a borrower pays on their old loan. ΔR_t^m is the 3-month change in the market rate. Sample includes 126,836 loans with fixation ending between 2018 and 2028, of which 42,095 have refinanced internally. *Vintage BH* means the baseline hazard is allowed to vary across origination vintages. *Refi-month FE* captures the year-month of expiration. Table shows exponentiated coefficients; >1 means increased hazard while <1 means decreased hazard. Standard errors (clustered at calendar month level) in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Loan adjustments at refinancing

Dependent variable:	Term adjustment (months)			Balance reduction (0/100)			New fixation (years)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Market rate change (pp)	8.536***	6.523***	7.620***	−0.005	0.353***	1.181***	−0.507***	−0.139***	0.549***
	(0.254)	(0.295)	(0.616)	(0.116)	(0.119)	(0.325)	(0.032)	(0.034)	(0.052)
Borrower age		0.281***	0.283***		0.000	0.006		−0.035***	−0.033***
		(0.024)	(0.023)		(0.017)	(0.017)		(0.002)	(0.002)
Male (0/1)		1.921***	1.937***		−2.490***	−2.517***		−0.196**	−0.229***
		(0.669)	(0.669)		(0.674)	(0.642)		(0.085)	(0.072)
Couple (0/1)		−2.334***	−2.465***		0.088	0.020		0.228***	0.179***
		(0.689)	(0.684)		(0.610)	(0.583)		(0.074)	(0.061)
Has bank account		2.269***	2.088***		−0.218	−0.248		0.102**	0.064
		(0.548)	(0.539)		(0.377)	(0.378)		(0.042)	(0.040)
Maturity old loan (years)		−3.250***	−3.251***		0.225***	0.213***		0.154***	0.148***
		(0.149)	(0.147)		(0.026)	(0.027)		(0.003)	(0.003)
Fixation old loan (years)		2.386***	2.639***		0.194*	0.412***		0.342***	0.526***
		(0.194)	(0.242)		(0.105)	(0.147)		(0.014)	(0.022)
Outstanding balance (log)		10.066***	9.822***		3.499***	3.483***		0.487***	0.434***
		(0.391)	(0.398)		(0.301)	(0.297)		(0.040)	(0.034)
Refi-month FE	No	No	Yes	No	No	Yes	No	No	Yes
Adj. R2	0.08	0.28	0.29	-0.00	0.01	0.02	0.05	0.32	0.34
Avg. Y	-26.35	-26.36	-26.36	14.41	14.41	14.41	7.52	7.52	7.52
Observations	39,305	39,303	39,303	39,305	39,303	39,303	39,305	39,303	39,303

Notes: This table reports estimates of regressions of loan choices on the subsample of internally refinanced loans. In Columns 1–3, *term adjustment* is the difference between the term of the new loan and the term of the passive counterfactual loan. In Columns 4–6, *balance reduction* equals 100 if the borrower makes an additional payment at refinancing that exceeds 5% of the original loan amount. In Columns 7–9, *new fixation* is the rate fixation period after refinancing. *Market rate change* is the difference between the 10-year mortgage rate at refinancing and at origination of the old loan, computed from newly originated loans in the bank data. *Borrower age* is borrower age at refinancing. *Male* is equal to one if the borrower is a single male (versus female or couple). *Couple* is equal to one if the borrower is a couple (versus male or female). *Has bank account* is equal to one for borrowers with a current account at the bank. *Maturity old loan* is the term of the old loan. *Fixation old loan* is the number of years the expiring interest rate was fixed for. *Outstanding balance* is the natural logarithm of the expected residual loan balance at expiration assuming no extra payments. *Refi-month FE* captures the year-month of loan expiration. Constant included but not reported. Robust standard errors are two-way clustered at the refinancing-month and borrower level and reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Effects of changes in hypothetical refinancing situation

Dependent variable (0/1):	Advisor	Search	Prepay	Forward	Costs ↓	Income ↑	Fix ≥10y
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
V2: 1.5% to 3.5% in 3y	−0.153***	−0.057***	−0.009	−0.042	−0.057**	−0.071***	−0.011
	(0.025)	(0.019)	(0.024)	(0.027)	(0.028)	(0.027)	(0.027)
V3: 3% to 3.5% in 1y	−0.047*	−0.015	−0.041	0.100***	−0.008	−0.056**	0.059**
	(0.024)	(0.019)	(0.025)	(0.027)	(0.028)	(0.027)	(0.027)
Controls	Y	Y	Y	Y	Y	Y	Y
Avg. Y V1	0.78	0.88	0.71	0.47	0.46	0.48	0.56
Observations	1,913	1,913	1,913	1,913	1,913	1,913	1,913
R-squared	0.05	0.06	0.10	0.08	0.06	0.12	0.07

Notes: The table reports estimates of regressions of actions in the context of a hypothetical refinancing situation. Other than in Column 7, the dependent variables are likelihoods of action measured on a four-point scale, covering "very unlikely," "rather unlikely," "rather likely," and "very likely." We construct an indicator for each action, equal to one if the action is rather or very likely, and zero if it is rather or very unlikely. *Advisor* refers to meeting an advisor from the current lender; *search* refers to comparing offers by different lenders; *prepay* is reducing the loan balance; *forward* means locking in rates using a forward loan; *costs* ↓ is lowering spending; *income* ↑ is increasing income; and *fix* ≥*10y* equals one if the borrower would choose a fixation period of 10 years or for as long as possible, and equals zero for one or five years. *V2: 1.5% to 3.5% in 3y* indicates vignette 2. *V3: 3% to 3.5% in 1y* indicates vignette 3. The effects are relative to vignette 1, which describes a rate increase from 1.5% to 3.5% in 1y. Survey *controls* include the perceived past-3y change in the mortgage rate (5-point scale); point estimates of the rate today and in 2y (1% tails winsorized); uncertainty about the rate in 2y (5-point scale); self-reported risk tolerance, debt aversion, trust in banks, and financial literacy (all on a 5-point scale); buckets of household income net of regular expenses; and indicators for university education, having non-owner-occupied property, traditional savings products (e.g., term deposit), life insurance, stocks, crypto, and completing the survey after the bank sent a reminder email. From the bank data, we control for log age, log total mortgage debt, the number of advisor meetings (past 12 months), number of online-banking logins (past 30 days), fixed effects for a proxy for neighborhood quality (8-point scale), as well as indicators for letter reception, living in East Germany, and having Bausparen or a public-subsidy loan. Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Letter effects observed in survey data

DV: *Scale:*	Letter read 0/1	Rate change Std.	Current rate 0/1	Pay change %	Prepay know Std.	Forward know Std.	Prepay hypo Std.	Forward hypo Std.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Indicator for each letter								
Letter 1	0.295***	−0.098	−0.008	0.016	0.142	0.142	0.175*	−0.087
	(0.037)	(0.092)	(0.040)	(0.028)	(0.099)	(0.094)	(0.093)	(0.092)
Letter 2	0.310***	−0.073	0.025	−0.014	0.116	0.142	0.129	−0.163*
	(0.039)	(0.095)	(0.041)	(0.029)	(0.104)	(0.093)	(0.099)	(0.098)
Letter 3	0.370***	−0.071	−0.050	0.022	0.211**	0.142	0.097	0.007
	(0.039)	(0.091)	(0.041)	(0.028)	(0.095)	(0.095)	(0.095)	(0.094)
Panel B. Indicator for any letter								
Any letter	0.326***	−0.081	−0.012	0.008	0.158*	0.142*	0.134*	−0.078
	(0.027)	(0.075)	(0.034)	(0.024)	(0.085)	(0.080)	(0.078)	(0.078)
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Avg. Y CG	0.08	0.00	0.77	0.05	0.00	0.00	0.00	0.00
N	882	882	882	660	882	882	882	882
R2	0.12	0.07	0.06	0.07	0.08	0.14	0.05	0.07

Notes: This table reports estimates from regressions of survey variables on letter dummies. We standardize dependent variables that are not binary or percentage changes. *Letter read* is an indicator that the respondent states they have read a letter from the bank on increases in mortgage rates in the past two months. *Rate change* is a qualitative estimate of the level of the mortgage rate today relative to three years ago, measured on a five-point scale ranging from "much lower" to "much higher." *Current rate* is one if the perceived current rate on a new mortgage with a 10-year fixation period in Germany is 3–4%. *Pay change* captures the expected change in monthly payments relative to the current payment, estimated by respondents who report they need to refinance. Respondents first state whether they expect payments to go up, stay roughly the same, go down, or that they do not need to refinance. Those who expect payments to go up or go down then choose from a list the expected change in euros (in buckets of 50). *Prepay know* and *forward know* are self-reported measures of awareness of prepayment options / forward loans on a four-point scale, spanning "completely unknown" to "completely known." *Prepay hypo* is reducing the loan balance and *forward hypo* means locking in rates using a forward loan, both measured as actions on a four-point scale from "very unlikely" to "very likely" as part of the hypothetical refinancing situation. Panel A shows the effect of each letter relative to the control group. Panel B shows the effect of an indicator that pools all letter groups. We explain the letter RCT and the *controls* in Section 5. *Avg. Y CG* shows the average of the dependent variable in the control group, except for the standardized variables for which the average is zero in the estimation sample. Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Letter effects observed in bank data

DV (0/100):	Meet advisor	Refi	Early refi	Meet and open	Extra paym	Home sav / FW
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Aggregate effects of letter intervention						
Any letter	0.031	0.155	0.111	0.176*	0.176	0.001
	(0.327)	(0.118)	(0.068)	(0.104)	(0.417)	(0.065)
Panel B. Heterogeneous effects by distance to expiration						
Any letter	−0.039	−0.038	−0.025	−0.042	0.217	0.034
	(0.367)	(0.039)	(0.025)	(0.065)	(0.470)	(0.051)
Until May 2025	18.240***	22.012***	1.537*	12.068***	−9.853***	−1.856***
	(2.635)	(1.905)	(0.836)	(1.537)	(2.959)	(0.449)
June 2025 - May 2027	1.035	−0.084	0.053	−0.119	−0.213	0.114
	(1.551)	(0.333)	(0.325)	(0.327)	(2.363)	(0.355)
June 2027 - May 2029	−0.513	−0.206	−0.124	−0.143	−1.249	−0.112
	(1.101)	(0.129)	(0.119)	(0.226)	(1.651)	(0.171)
Any letter × Until May 2025	5.243**	3.711*	2.762***	4.052**	2.063	0.275
	(2.420)	(2.126)	(0.916)	(1.719)	(2.086)	(0.262)
Any letter × June 2025 - May 2027	−1.049	0.162	0.079	0.284	−1.482	−0.118
	(1.010)	(0.282)	(0.278)	(0.259)	(1.440)	(0.295)
Any letter × June 2027 - May 2029	0.092	0.039	−0.008	−0.048	0.484	−0.164
	(0.887)	(0.145)	(0.140)	(0.184)	(1.297)	(0.178)
Controls	Y	Y	Y	Y	Y	Y
Avg. Y CG	11.11	1.33	0.38	0.95	12.87	0.38
N	46845	46845	46845	46845	34195	46845
R2	0.06	0.20	0.03	0.10	0.02	0.01

Notes: This table reports estimates from regressions of realized post-RCT outcomes from the bank data on indicators for being in the letter treatment group. Panel B interacts the letter dummy with indicators of when borrowers face a fixed rate expiration next. The omitted groups are borrowers in the control (non-treated) group and borrowers whose fixed-rate period expires after May 2029, respectively. All outcome variables are observed as of May 31, 2025, and measure actions since November 15, 2024. *Meet advisor* indicates whether borrowers have met with a bank advisor at least once. *Refi* is an indicator for whether borrowers refinance internally. *Early refi* indicates whether borrowers refinance internally at least five weeks before loan expiration. *Meet and open* indicates whether a borrower meets with an advisor and originates a loan within seven days from the meeting. *Extra paym* indicates whether borrowers make extra payments. This specification restricts to borrowers that are allowed to make extra payments. *Home sav / FW* indicates whether borrowers open a new home savings product or originate a forward loan. *Avg. Y CG* shows the average of the dependent variable in the control group of non-recipients. We explain *controls* in Section 5.3. Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Heterogeneity in propensity to read letter

DV (0/1):	Having read bank letter in past two months on topic of mortgage-rate increases						
Trait:	Loan size	Loan reset	Loan repay	Literacy	Income	Rate change	Current rate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Letter	0.336***	0.341***	0.301***	0.239***	0.252***	0.191***	0.233***
	(0.027)	(0.028)	(0.032)	(0.037)	(0.040)	(0.066)	(0.058)
Trait	−0.017	0.097*	−0.015	−0.001	−0.042	0.005	−0.036
	(0.017)	(0.056)	(0.039)	(0.037)	(0.037)	(0.053)	(0.048)
Letter x trait	0.070***	−0.021	0.105*	0.182***	0.152***	0.168**	0.133**
	(0.026)	(0.073)	(0.057)	(0.052)	(0.053)	(0.072)	(0.065)
Observations	881	881	877	884	884	884	884
R-squared	0.10	0.10	0.10	0.12	0.10	0.10	0.10

Notes: This table reports estimates from regressions of the propensity to read the bank letter. Specifically, the dependent variable equals one if the respondent states they have read a letter from the bank over the past two months on the topic of mortgage-rate increases, and zero otherwise (no letter received, letter received but not read, does not remember). *Letter* is one if the respondent has received any of the three letters, and zero if not. We explain the letter RCT in Section 5.1. *Trait* is a loan (Columns 1–3) or borrower (Columns 4–7) characteristic we interact with *letter*: *Loan size* is the standardized current total mortgage debt. *Loan reset* is one if the end to the interest-rate fixation period is within two years. *Loan repay* equals one if the borrower has reduced the loan balance in the past using an annual partial repayment option (Sondertilgung). *Literacy* is one for self-reported financial literacy that is above the median. *Income* is one for above-median household income net of general expenses. *Rate change* is one if the respondent believes the current mortgage rate in Germany compared to three years ago (i.e., in 2021) is higher. *Current rate* is one if the perceived current rate on a new mortgage with a 10-year fixation period in Germany is 3–4%. Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Online Appendix:

The Response of Debtors to Rate Changes

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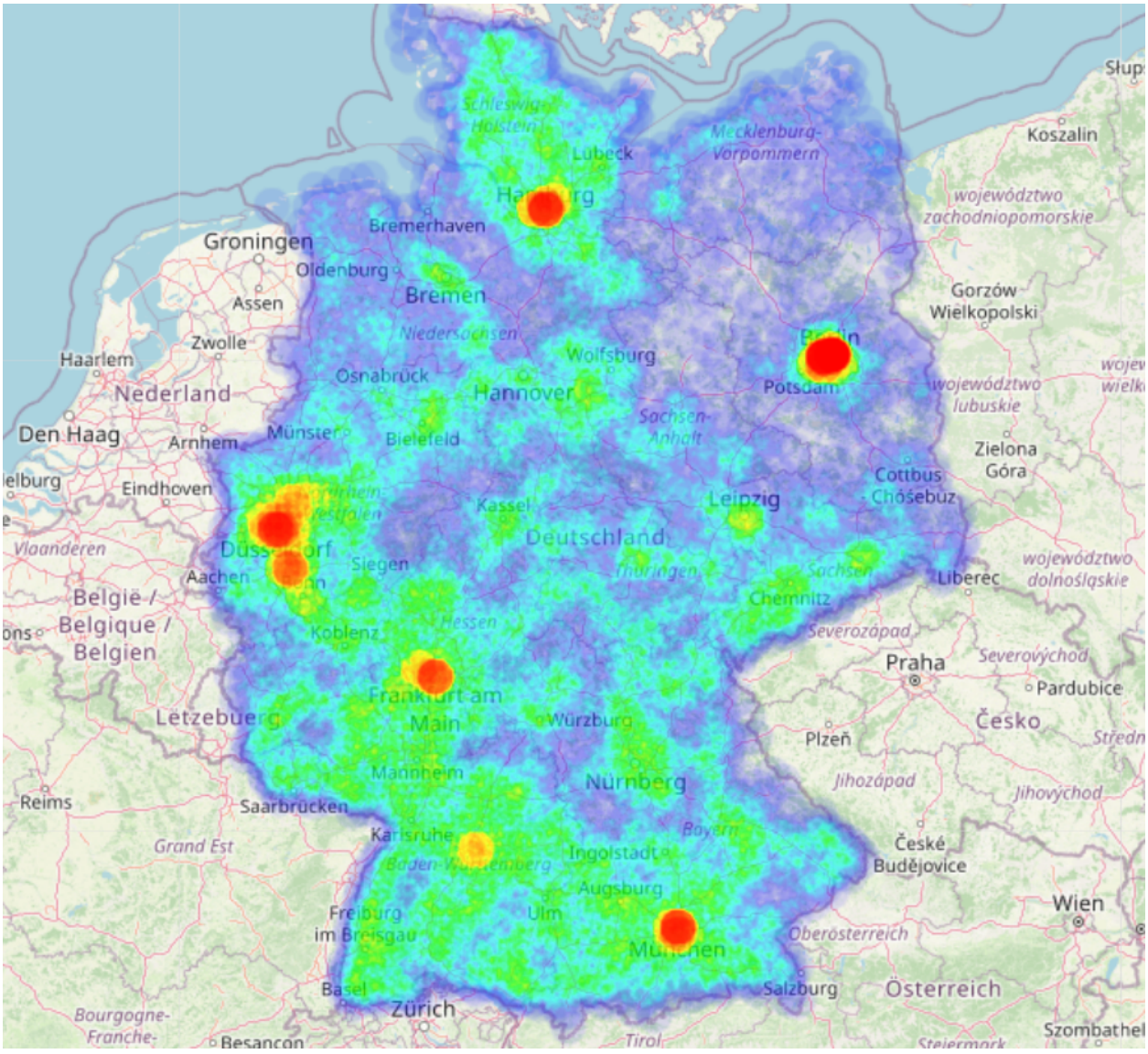
Philip Schnorpfeil, and Michael Weber

Not for Publication

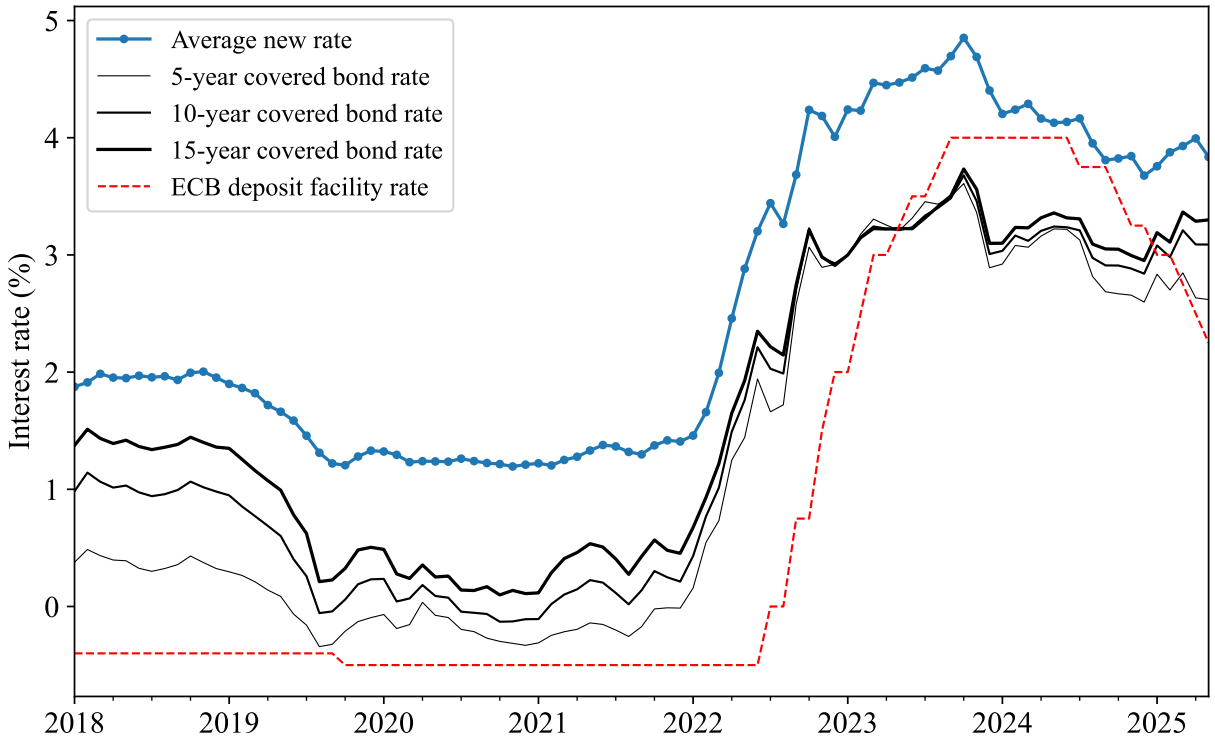
A Appendix figures and tables

Figure A.1: Geographic distribution of outstanding loan amounts at partner bank



Notes: The map visualizes the geographic distribution of outstanding credit volume at our partner bank as of October 2024.

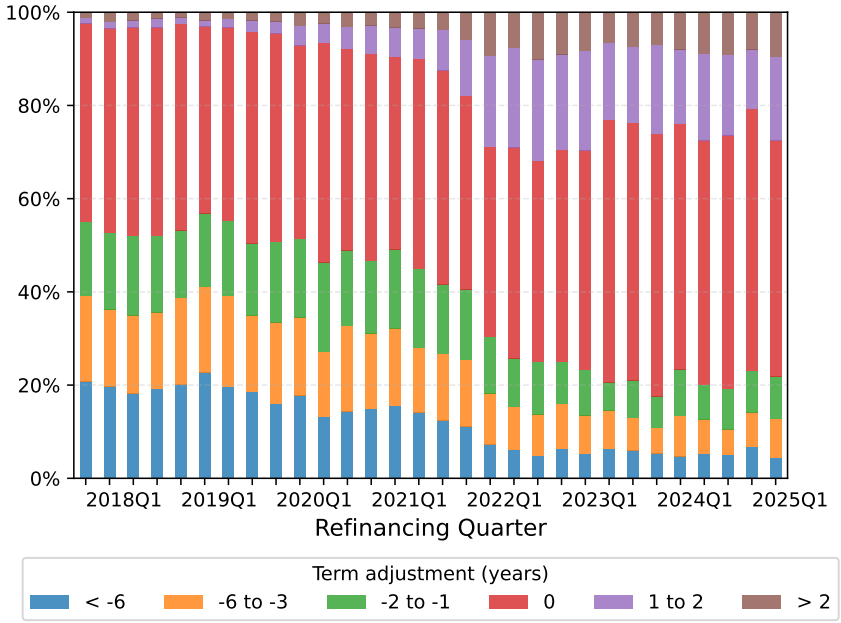
Figure A.2: Mortgage and policy rates



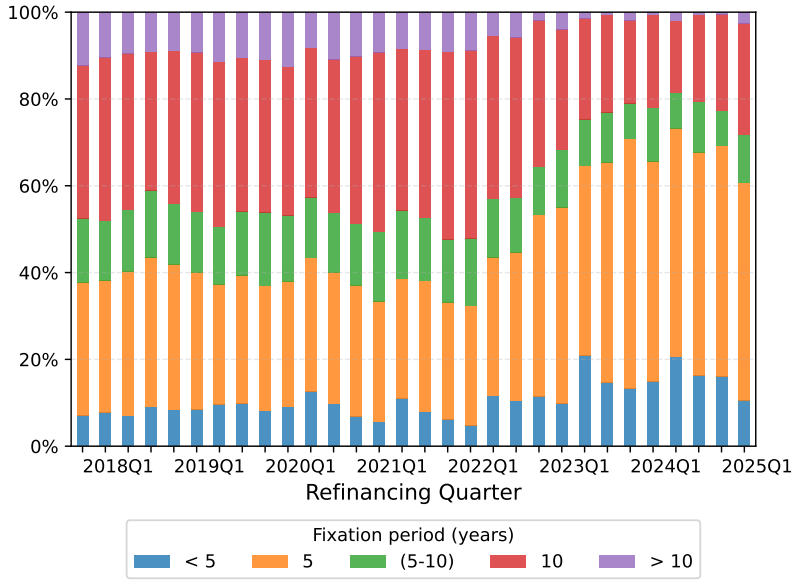
Notes: This figure plots the average interest rate on newly originated mortgages by our bank (blue dotted line) by month, the monthly 5, 10 and 15 year covered bond rate (black solid lines), and the ECB Deposit Facility Rate (red dashed line).

Figure A.3: Refinancing choices by quarter of refinancing

A. Term adjustments

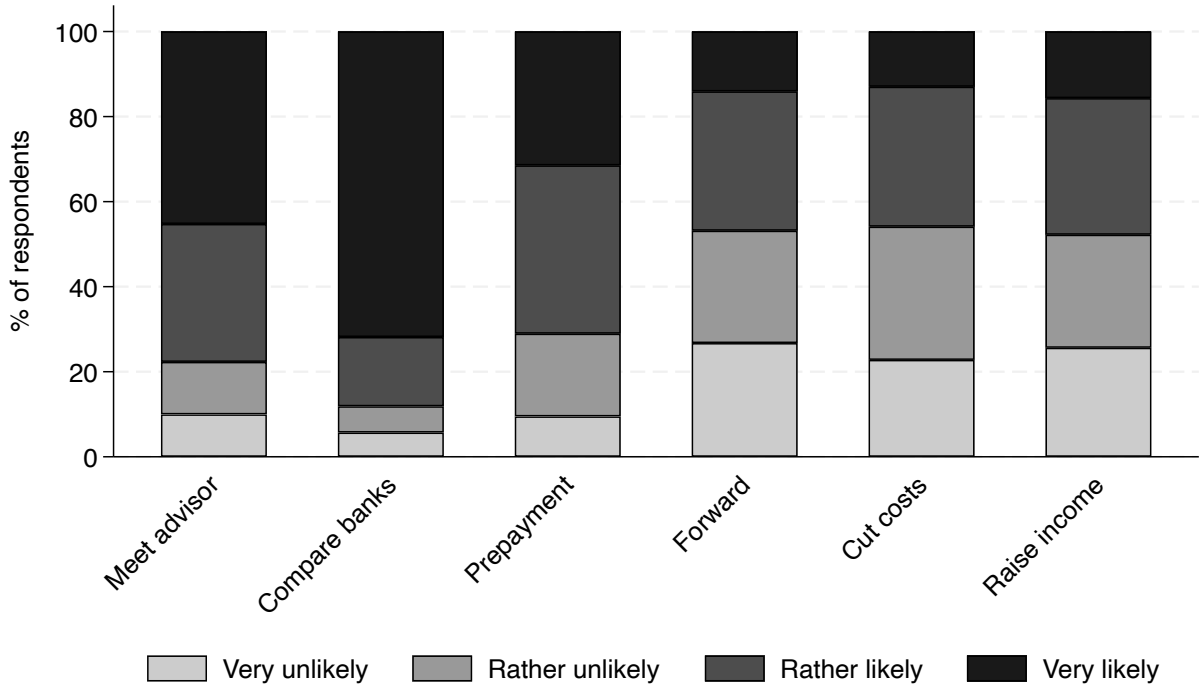


B. Fixation period



Notes: The figure shows how refinancing choices change over time. Panel A plots the distribution of term adjustment choices by quarter of refinancing. Term adjustment is the difference in years between the realized new term and the passive counterfactual term. Panel B plots the distribution of the length of the new fixation period (in years) by quarter of refinancing.

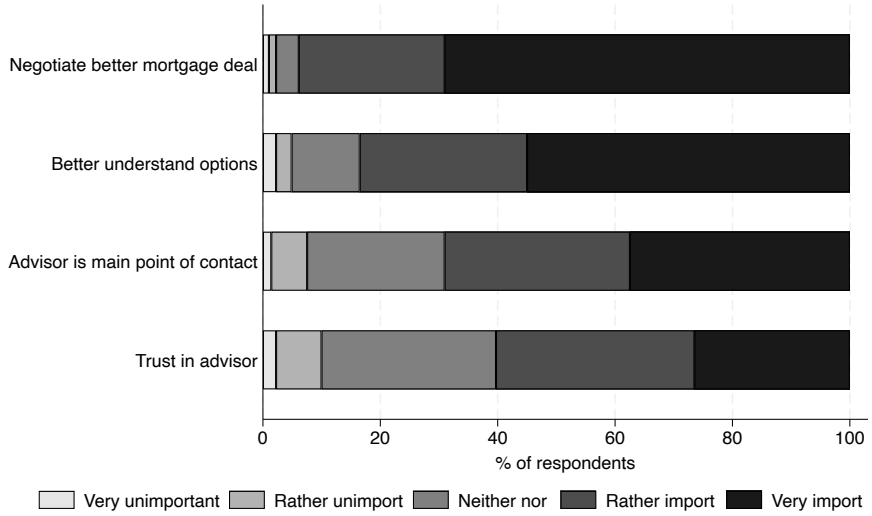
Figure A.4: Actions as part of hypothetical refinancing situation



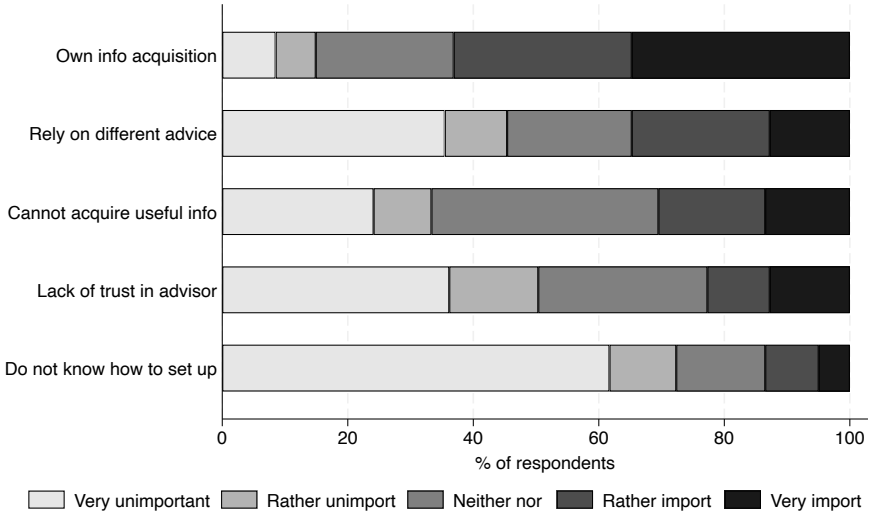
Notes: The figure shows the distribution of actions in the context of a hypothetical refinancing situation. We restrict the sample to 643 respondents who receive the baseline scenario of a hypothetical €100,000 mortgage with an interest rate of 1.5% that resets in one year to a rate of 3.5% (vignette 1). We study likelihoods of action measured on a four-point scale, covering "very unlikely," "rather unlikely," "rather likely," and "very likely." The actions are as follows. *Meet advisor* refers to meeting an advisor from the current lender; *compare banks* refers to comparing offers by different loan providers; *prepayment* is reducing the loan balance; *forward* means locking in rates using a forward loan; *cut costs* is lowering spending; and *raise income* is increasing income.

Figure A.5: Reasoning about advisor meeting as part of hypothetical refinancing situation

Panel A. Reasons of the 78% of borrowers who would likely meet advisor



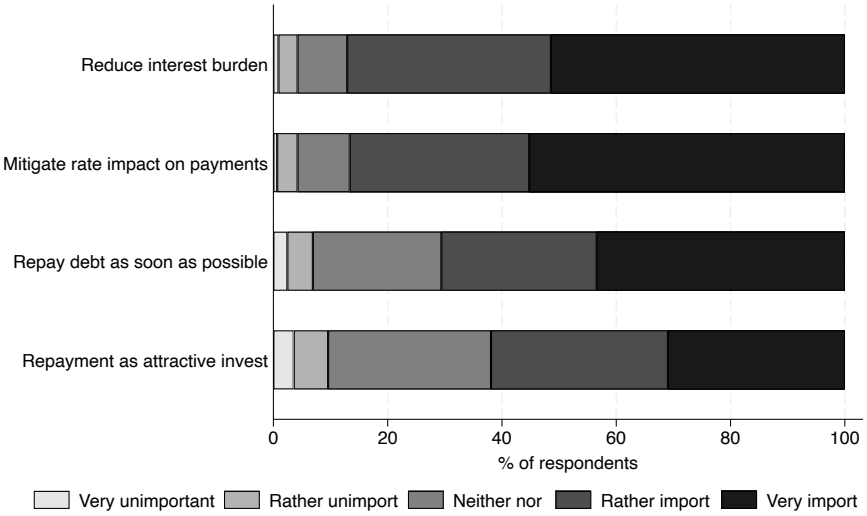
Panel B. Reasons of the 22% of borrowers who would be unlikely to meet advisor



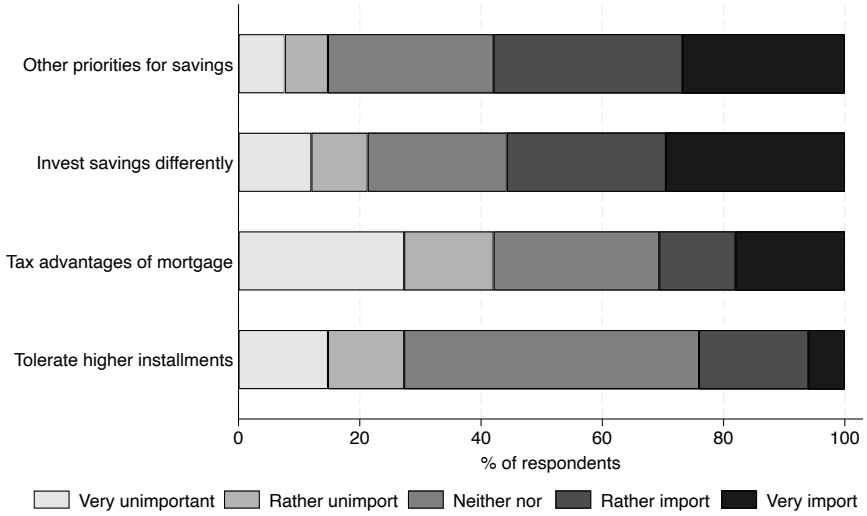
Notes: The figure shows how respondents reason about meeting an advisor from the current lender in the context of a hypothetical refinancing situation. We restrict the sample to 643 respondents who receive the baseline scenario of a hypothetical €100,000 mortgage with an interest rate of 1.5% that resets in one year to a rate of 3.5% (vignette 1). Among them, only the 78% of borrowers who state they would be "rather" or "very" likely to meet an advisor subsequently explain why (Panel A). Accordingly, only the remaining 22% of borrowers who would be "rather" or "very" unlikely to meet an advisor explain why not (Panel B). For each predefined reason, respondents choose from five answers ranging from "very unimportant" to "very important."

Figure A.6: Reasoning about prepayment as part of hypothetical refinancing situation

Panel A. Reasons of the 71% of borrowers who would likely prepay



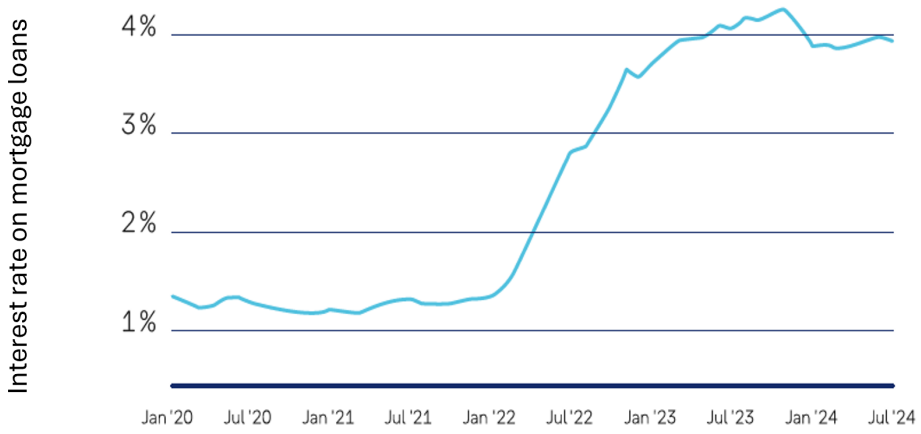
Panel B. Reasons of the 29% of borrowers who would be unlikely to prepay



Notes: The figure shows how respondents reason about prepaying a mortgage in the context of a hypothetical refinancing situation. Our definition of prepayments, which respondents read, is broad, encompassing any voluntary, extra reduction in the loan balance. We restrict the sample to 643 respondents who receive the baseline scenario of a hypothetical €100,000 mortgage with an interest rate of 1.5% that resets in one year to a rate of 3.5% (vignette 1). Among them, only the 71% of borrowers who state they would be "rather" or "very" likely prepay subsequently explain why (Panel A). Accordingly, only the remaining 29% of borrowers who would be "rather" or "very" unlikely to prepay explain why not (Panel B). For each predefined reason, respondents choose from five answers ranging from "very unimportant" to "very important."

Figure A.7: Graphics shown in the letter

Panel A. Recent increase in mortgage rates in Germany



Source: Deutsche Bundesbank SUD 131

Panel B. Initial impact of higher mortgage rates on monthly payments

	Initial effect on interest payments	
	Annual	Monthly
Interest rate increase from 2% to 4% on a €100,000 loan amount	+ 2,000 euros	+ 167 euros

Notes: The figures show the graphics embedded in the letter. We describe the letter experiment in Section 5.1 and show the letter content in Appendix D. Panel A shows the development of the average effective fixed interest rate including costs on newly originated mortgages for households in Germany. The data come from Deutsche Bundesbank (SUD 131). Panel B illustrates how an increase in the interest rate by two percentage points of a € 100,000 mortgage affects interest payments initially on an annualized and on a monthly basis.

Table A.1: Comparison of means across samples

Data source:	PHF	Partner bank		
Sample:		All mortgagors	Survey invited	Survey completed
Demographic characteristics				
Age (years)	50.22	50.51	48.71	48.08
University completed (0/1)	0.36			0.62
Household net income (€)	4,257.28			5,680.12
Male (vs. F or C) (0/1)		0.26	0.35	0.42
Couple (vs. F or M) (0/1)		0.60	0.47	0.41
Neighborhood quality (1/9)		5.88	5.88	6.09
Mortgage characteristics				
Original amount (€ k)	203.17	182.61	195.57	211.74
Current amount (€ k)	139.85	148.17	163.14	175.89
Monthly payment (€)	985.20	859.57	886.27	946.52
Fixation period (years)	11.46	11.92	12.25	12.37
Interest rate (%)	2.16	2.29	2.16	2.03
Value property >2015 (€ k)	311.09	389.35	383.15	372.01
>1 collateral property (%)	9.35	4.23	4.51	6.02
Relation with partner bank				
Individual advisor (0/1)		0.27	0.34	0.43
Advisor meetings (no.)		1.72	1.89	2.05
Credit card (0/1)		0.11	0.20	0.26
Checking account (0/1)		0.41	0.58	0.61
Observations	989	190,375	40,357	1,705

Notes: This table presents summary statistics for mortgagors' demographic characteristics (survey and bank data), loan characteristics (bank data), and their relation with the partnering bank (bank data). We report the mean of each variable for four samples: a representative German sample from the Bundesbank's Panel on Household Finances (PHF), mortgagors we observe in the bank data (see Section 3.1), those who receive a survey invitation (see Section 4.2), and those who complete the survey. We restrict the PHF sample to households with a mortgage, within which we focus on the person most knowledgeable about financial matters. As the latest PHF data are from 2021, we require an active mortgage in 2021 in the bank samples, and report mortgage characteristics from that year (we only have current data on demographics and the bank relation). *Household net income* is a point estimate in the PHF and the mid point of the income bucket selected by a respondent of our survey (e.g., € 4,000 to 4,999). *Male* equals one if the bank customer is male rather than female (F) or a couple (C). *Original amount* refers to loan origination or, if available, refinancing. *Value property >2015* is the self-reported purchase price of a property if bought after 2015 in the PHF, and the initial value of the collateral underlying a loan initiated after 2015 in the bank samples. *>1 collateral property* indicates whether the mortgagor uses more than one property as collateral.

Table A.2: Letter effects on propensity to participate in survey

Dependent variable:	Survey started (0/1)		Survey completed (0/1)	
	(1)	(2)	(3)	(4)
Panel A. Indicator for each letter				
Letter 1: baseline, all sections included	0.007	0.008	0.003	0.004
	(0.005)	(0.005)	(0.004)	(0.004)
Letter 2: section on rate uncertainty omitted	0.003	0.003	0.000	0.000
	(0.005)	(0.005)	(0.004)	(0.004)
Letter 3: section on payment impact omitted	0.004	0.004	0.004	0.004
	(0.005)	(0.005)	(0.004)	(0.004)
Panel B. Indicator for any letter				
Any of the three letters received	0.004	0.005	0.002	0.003
	(0.004)	(0.004)	(0.003)	(0.003)
Controls from bank data	N	Y	N	Y
Avg. Y control group	0.053	0.053	0.045	0.045
Observations	19,477	19,426	19,477	19,426
R-squared	0.00	0.00	0.00	0.00

Notes: This table reports estimates from regressions of indicators for starting or completing the survey on indicators for receiving the letter. The estimation sample includes mortgagors from the partner bank who are part of the letter experiment (including the control group) and receive an email invitation to participate in the survey. *Survey started* equals one if a mortgagor clicks on the survey link embedded in the email invitation. *Survey completed* is one if the mortgagor makes it to the end of the survey. Panel A shows the effect of each letter relative to the control group. Panel B is on the effect of an indicator that pools all letter groups. We explain the letter RCT in Section 5.1. *Controls from bank data* include account type (female, male, couple), age, living in East Germany, log total current loan amount, and indicators for neighborhood quality and having Bausparen or a public-subsidy loan. Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.3: Association between actual choices and hypothetical refinancing

Dependent variable (0/1):	Advisor	Search	Prepay	Forward	Costs ↓	Income ↑	Fix ≥10y
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Advisor meeting (0/1)	0.038	−0.009	0.067**	0.017	0.001	0.011	−0.018
	(0.028)	(0.023)	(0.027)	(0.030)	(0.032)	(0.031)	(0.031)
Any prepayment (0/1)	0.015	−0.002	0.164***	−0.039	0.009	−0.004	−0.005
	(0.025)	(0.020)	(0.023)	(0.027)	(0.027)	(0.027)	(0.027)
Any forward (0/1)	0.052*	−0.032	−0.037	0.125***	−0.007	−0.007	0.122***
	(0.029)	(0.022)	(0.028)	(0.031)	(0.031)	(0.030)	(0.030)
Bausparen (0/1)	0.035	−0.029	−0.007	0.058**	0.002	0.018	0.043
	(0.025)	(0.020)	(0.026)	(0.028)	(0.029)	(0.028)	(0.028)
Fixation length (0–2)	0.006	−0.001	−0.012	−0.006	0.012	−0.011	0.063***
	(0.018)	(0.014)	(0.017)	(0.019)	(0.019)	(0.018)	(0.019)
Controls	Y	Y	Y	Y	Y	Y	Y
Avg. Y V1	0.78	0.88	0.71	0.47	0.46	0.48	0.56
Observations	1,556	1,556	1,556	1,556	1,556	1,556	1,556
R-squared	0.06	0.07	0.12	0.11	0.07	0.14	0.09

Notes: The table reports estimates of regressions of actions in the context of a hypothetical refinancing situation. Other than in Column 7, the dependent variables are likelihoods of action originally measured on a four-point scale, covering "very unlikely," "rather unlikely," "rather likely," and "very likely." We construct an indicator for each action, which is equal to one if the action is rather or very likely, and zero if it is rather or very unlikely. *Prepay* is reducing the loan balance through voluntary, extra payments; *forward* means locking in rates using a forward loan; *costs* ↓ is lowering spending; *income* ↑ is increasing income; *advisor* refers to meeting an advisor from the current lender; *search* refers to comparing offers by different loan providers; and *fix* ≥*10y* equals one if the borrower would choose a fixation period of at least 10 years, and equals zero for one or five years. Explanatory variables of interest are from the bank data. *Any prepayment* indicates whether the mortgagor has made any voluntary, extra repayments in the past. *Any forward* equals one if the borrower has had a forward mortgage at some point. *Bausparen* is one if the borrower currently has a Bausparen product. *Advisor meeting* captures whether the borrower met an advisor over the past 12 months. *Fixation length* is zero if the original rate fixation period is less than 10 years, one if it is 10 to less than 15 years, and two for at least 15 years. We list the set of *controls* in Section 4.4, and add vignette indicators. *Avg. Y V1* is the average of the dependent variable for vignette-1 respondents. Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.4: Letter sample

	Control group (1)	Treat: group 1 (2)	Treat: group 2 (3)	Treat: group 3 (4)	p-value (1)=(2) (5)	p-value (1)=(3) (6)	p-value (1)=(4) (7)
Original loan amount (1,000 euros)	171.25	166.45	168.67	168.72	0.03**	0.25	0.27
	(218.41)	(209.69)	(205.23)	(216.75)			
Current balance (1,000 euros)	131.17	126.76	129.13	129.37	0.03**	0.30	0.38
	(192.59)	(182.99)	(179.99)	(192.48)			
Residual loan amount (1,000 euros)	89.91	85.79	88.29	88.25	0.01***	0.29	0.29
	(154.45)	(138.16)	(137.35)	(142.56)			
Fixation period (months)	150.94	151.48	150.84	150.70	0.33	0.85	0.66
	(51.86)	(52.43)	(51.47)	(51.61)			
Loan term (months)	273.54	273.35	273.24	273.48	0.86	0.79	0.95
	(104.56)	(103.48)	(104.05)	(104.86)			
Monthly installment (euros)	757.86	747.50	751.48	751.95	0.29	0.50	0.55
	(900.45)	(943.77)	(879.54)	(971.55)			
Interest Rate (%)	2.00	2.01	2.01	2.00	0.67	0.22	0.56
	(0.96)	(0.95)	(0.96)	(0.95)			
Origination Year	2017.95	2017.92	2017.92	2017.96	0.28	0.29	0.91
	(3.12)	(3.11)	(3.13)	(3.09)			
Borrower Age	50.14	50.30	50.15	50.12	0.17	0.89	0.88
	(10.94)	(10.94)	(10.79)	(10.81)			
Has bank account	0.41	0.41	0.41	0.40	0.36	0.95	0.01***
	(0.49)	(0.49)	(0.49)	(0.49)			
Meets advisor	0.88	0.88	0.88	0.88	0.40	0.83	0.99
	(0.33)	(0.33)	(0.33)	(0.33)			
Has brokerage account	0.11	0.11	0.12	0.11	0.62	0.02**	0.72
	(0.31)	(0.31)	(0.32)	(0.31)			
Received survey	0.47	0.46	0.46	0.46	0.36	0.08*	0.04**
	(0.50)	(0.50)	(0.50)	(0.50)			
Unique borrowers	11,889	11,887	11,892	11,892			
Observations	17,853	17,919	17,991	17,927			

Notes: This table reports means and standard deviations in parentheses of loan characteristics and demographics of borrowers in the control group (Column 1) and the three letter treatment arms (Columns 2, 3, and 4). Columns 5, 6 and 7 report the p-value of the t-test of equal means across groups. *Original loan amount* is the loan amount at loan origination. *Current balance* is the loan balance at the time of the experiment. *Residual loan amount* is the expected outstanding loan amount at expiration of the fixed rate, assuming no deviation from the amortization schedule. *Fixation period* is the length of the fixed rate period, in months. *Loan term* is the total term of the loan, in months. *Has bank account* is an indicator for whether borrowers have at least €2,000 deposited at the bank. *Meets advisor* is an indicator for whether borrowers meet with a bank advisor at least once over the sample period. *Has brokerage account* is an indicator for whether borrowers have a brokerage account at the bank. *Received survey* indicates whether the borrower was invited to participate in our survey. *Unique borrowers* reports the number of borrowers in each group. The last row reports the number of observations used to compute the descriptive statistics. This corresponds to the number of loans by the borrowers in each group that are outstanding at the time of the experiment.

B Passive counterfactual estimation

This section presents the methodology we adopt to predict the interest rate, and thus payment, applicable if borrowers had passively rolled over their debt at reset. The goal is to assess how the realized refinancing choices deviate from the passive counterfactual.

We start by estimating a Random Forest machine learning model to predict the interest rate on prolongation loans based on the set of covariates that are relevant for pricing as communicated by the bank: the month of loan origination, loan term, length of the fixation period, loan amount, and time gap between origination and reset (prolongations can be agreed upon up to six months ahead of the end of the rate fixation period).

We use the estimated model to predict the counterfactual for loans that are refinanced internally in sample, namely those for which we observe both the old loan and the new loan characteristics. For each expiring loan, we calculate the outstanding loan balance at the reset date, assuming that the borrower followed the contractual amortization schedule without prepayments or delays. This balance is the amount to be rolled over. The term of the counterfactual prolongation loan is either the residual maturity of the original loan (i.e., original term minus the length of the fixed-interest period) or such that the initial amortization rate of the prolongation loan matches the final amortization rate (*Tilgungssatz*) of the original loan at the end of the fixed-interest period. This approach mirrors the bank's actual refinancing offers. The goal of the latter is to prevent a reduction in amortization speed upon prolongation. As for the counterfactual fixation, we define it as the minimum of the prior fixation and the residual term. We use the estimated model to predict the rate for a loan with such characteristics originated in the month of the rate reset. We then compute the counterfactual payment based on this estimated rate. Table A.5 provides an illustrative example.

Table A.5: Example of counterfactual and actual loan choice

Loan type	Amount (€)	Term (months)	Fixation (months)	Rate (%)	Payment (€)
Old loan	83,037.00	180	59	1.35	509.96
Passive counterfactual	57,641.74	114	59	2.51	565.48
New loan	57,214.00	113	59	2.71	574.37

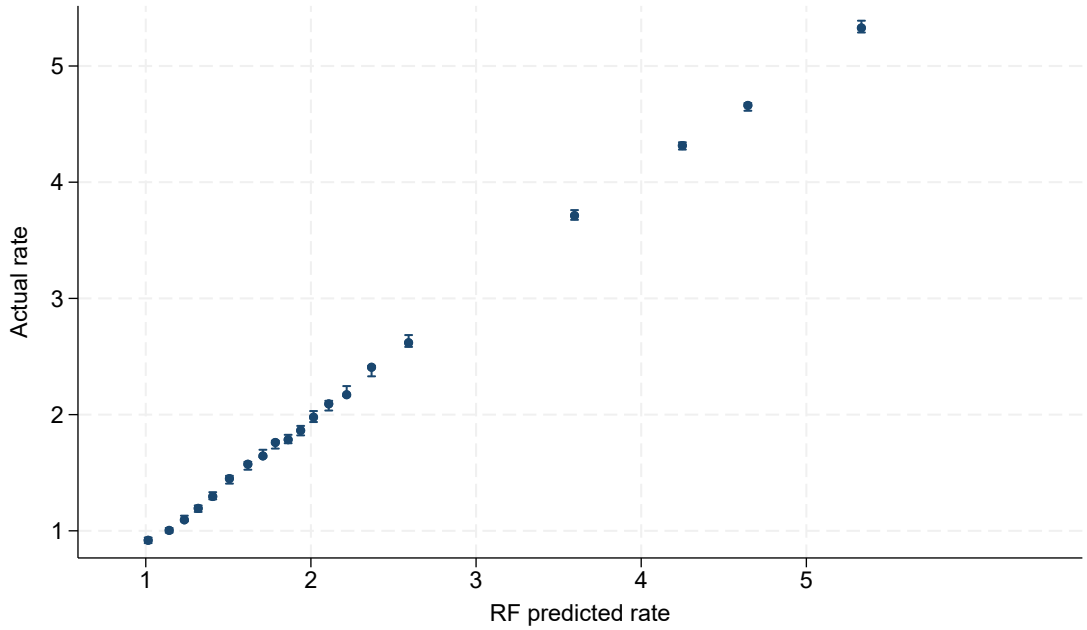
Notes: This table reports an example of counterfactual calculation for a loan in our sample.

To verify the accuracy of the counterfactual, we focus on the subset of loans that appear to have passively rolled-over their debt, as for these the counterfactual should match the observed prolongation. Since the bank data do not contain information on whether borrowers selected an offer sent by the bank, we infer this based on the features of the refinanced loan. Specifically, we classify a loan as a passive rollover if the new amount is within €1,000 of the expected outstanding balance, and both the term and interest-rate fixation differ by no more than three months from their respective counterfactuals. This identifies 4,778 such prolongations. Panel A of Figure A.8 shows a binned scatter plot

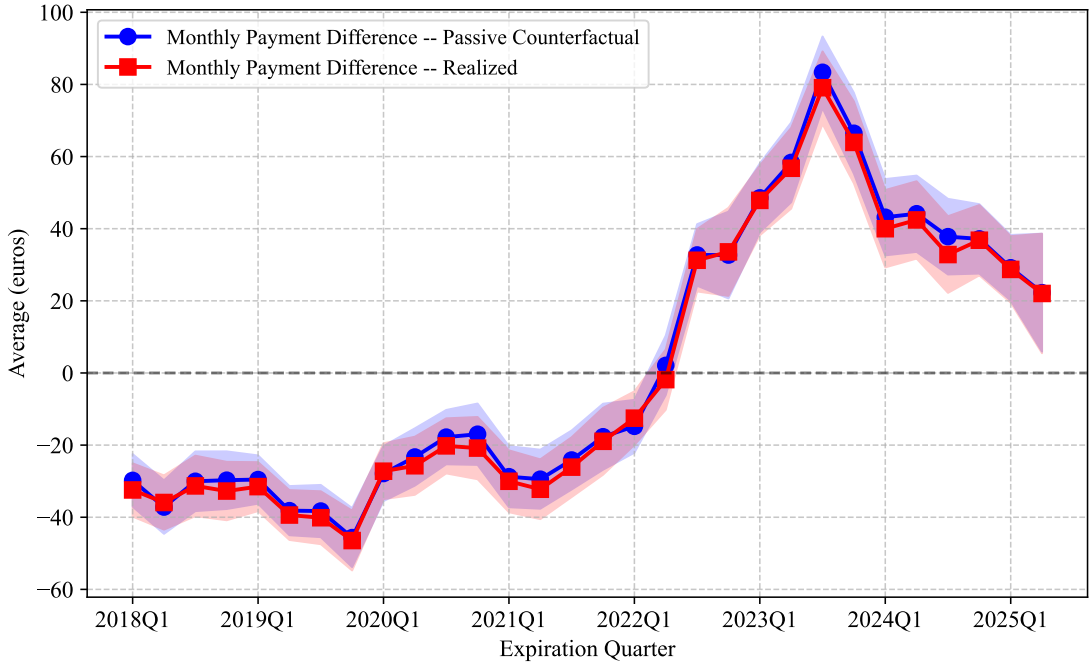
of the realized rates plotted against bins of the predicted rate. The predicted rates align closely with the observed rates. Panel B then replicates Panel B of Figure 4 on this subset, confirming that the counterfactual accurately reproduces roll-over offers.

Figure A.8: Prediction accuracy for passively rolled-over loans

A. Binned scatter of the relationship between predicted and actual rates



B. Average actual vs. counterfactual changes



C Survey text

This appendix provides the survey instructions translated from German to English. We use green text in brackets to highlight aspects of the survey design. We show non-numerical response options using a), b), c), and so forth.

C.1 Welcome screen

Welcome to this survey by Goethe University Frankfurt!

The survey will take **around 10 minutes**. Your responses will be aggregated and only used for scientific research. If you feel unfamiliar with some of the survey topics, that is fine. We ask you to provide your best estimate. Since we are interested in your unfiltered opinion, please refrain from relying on external sources (e.g., using a Google search).

As a thank-you for completing the survey, you will receive an **Amazon voucher worth €10**. To receive the voucher, you can enter your e-mail address at the end of the survey. Your e-mail address will only be used to send you the voucher.

Please do not use the "Back" button in your browser, as this may require restarting the survey. Do you have any questions? Please contact us at **umfrage@finance.uni-frankfurt.de**.

C.2 Pre-vignette section

Q1: How do you assess the current interest rate for mortgage loans in Germany compared to three years ago (i.e., in 2021)?

a) The current interest rate is much lower
b) Somewhat lower
c) Similar
d) Somewhat higher
e) Much higher

[Ask Q2 only if Q1 = d) or e).]

Q2: Do you think the increase in mortgage interest rates has an impact on your **household's financial situation**?

Impact on your **current** financial situation
[Likert scale from 1 ("Very negative") to 3 ("No impact") to 5 ("Very positive")]

Impact on your **expected future** financial situation
[Likert scale from 1 ("Very negative") to 3 ("No impact") to 5 ("Very positive")]

[Allow non-negative values only; at most one decimal place. If a negative entry is attempted, display: "Entries cannot be negative." Use a comma as the decimal separator.]

Q3: What do you think is the current **interest rate** of a newly originated mortgage with a 10-year fixed-rate period? And what interest rates do you expect for the future?

Please enter a positive number with at most one decimal place (use a comma as the decimal separator).

Current annual interest rate: _____ %

Annual interest rate in two years: _____ %

Annual interest rate in five years: _____ %

Q4: What do you think is the probability that **the actual mortgage interest rate in two years will be higher than (your answer in Q3 for "in two years" + 2 percentage points)**?
[Likert scale from 1 ("Very unlikely") to 5 ("Very likely")]

Q5: If your mortgage is not fully repaid at the end of the fixed-rate period, you will need follow-up financing. Have you already prepared for the **future follow-up financing of your loan**, or do you plan to do so?

a) No, I have not prepared and will not do so
b) Yes, I plan to prepare
c) Yes, I have already prepared

[If Q5 = a), ask Q5a.]

Q5a: Please describe why you are not preparing for the future follow-up financing of your loan.

Your response is very important for our research project. Please take the time to answer carefully.

[Open-ended response field.]

[If Q5 = b), ask Q5b]

Q5b: Please describe how you plan to prepare for the future follow-up financing of your loan and what the reasons are.

Your response is very important for our research project. Please take the time to answer carefully.

[Open-ended response field]

When would you like to begin preparing?

a) Less than six months before follow-up financing
b) Six to 12 months before
c) 1–2 years before
d) 2–4 years before
e) More than four years before
f) No response

[If Q5 = c), ask Q5c]

Q5c: Please describe how you prepared for the future follow-up financing of your loan and what the reasons were.

Your response is very important for our research project. Please take the time to answer carefully.

[Open-ended response field]

When did you begin preparing?

a) Less than six months before follow-up financing

b) Six to 12 months before
c) 1–2 years before
d) 2–4 years before
e) More than four years before
f) No response

Q6: What do you expect will happen to your **monthly payment (interest + principal)** with the future follow-up financing of your loan?

Please do not take into account planned actions (e.g., special repayments, that is, voluntary extra repayments) that could affect the future payment amount.

a) The payment will decrease
b) The payment will remain roughly unchanged
c) The payment will increase
d) I will not need follow-up financing—the loan will be fully repaid

[If Q6 = a), ask Q6a]

Q6a: By how much do you expect your **monthly payment (interest + principal)** to decrease with the future follow-up financing of your loan?

a) At least €250 less
b) €200–€250 less
c) €150–€200 less
d) €100–€150 less
e) €50–€100 less
f) Up to €50 less

[If Q6 = c), ask Q6b]

Q6b: By how much do you expect your **monthly payment (interest + principal)** to increase with the future follow-up financing of your loan?

a) Up to €50 more
b) €50–€100 more
c) €100–€150 more
d) €150–€200 more
e) €200–€250 more
f) At least €250 more

Q7: In the past two months, have you received and read a **letter from your bank about increases in mortgage interest rates**?

a) No, I have not received a letter
b) I have received a letter but have not read it
c) Yes, I have received a letter and read it
d) I do not remember

C.3 Vignette section

Q8: In the next questions, we would like to learn how you would behave in the following role-play. There are no right or wrong answers; we are interested in your opinion. **Your responses are very important for our research project**. Please take your time when answering.

[Randomly assign respondents to one of the following three variants]

[Variant 1]

> **Role-play:** Suppose the remaining balance of your mortgage is €100,000 and the **fixed-rate period ends in one year**. Your current interest rate is 1.5%. Due to changing market conditions, you expect your interest rate to **increase by two percentage points to 3.5%**, with uncertainty about the exact path.

[Variant 2]

> **Role-play:** Suppose the remaining balance of your mortgage is €100,000 and the **fixed-rate period ends in three years**. Your current interest rate is 1.5%. Due to changing market conditions, you expect your interest rate to **increase by two percentage points to 3.5%**, with uncertainty about the exact path.

[Variant 3]

> **Role-play:** Suppose the remaining balance of your mortgage is €100,000 and the **fixed-rate period ends in one year**. Your current interest rate is 3%. Due to changing market conditions, you expect your interest rate to **increase by 0.5 percentage points to 3.5%**, with uncertainty about the exact path.

[Place immediately below the framed text above. For all variants]

We will now ask you about several options you might consider in this situation. We will ask you in more detail about a) and c); the other options only briefly:

a) Appointment with your bank advisor
b) Comparing loan offers from different lenders
c) Reducing the outstanding loan balance (prepayment or partial repayment at the end of the fixed-rate period)
d) Fixing future loan terms today (forward loan)
e) Building up savings
f) Length of the fixed-rate period

[Show the respective framed text summarizing the role-play on top of question]

Q9: How likely is it that you would **schedule an appointment with an advisor at your bank** to prepare for the expected interest-rate increase?

[In Variant 2, append: "within the next 12 months"]

[Response options: "Very unlikely," "Rather unlikely," "Rather likely," "Very likely"]

[If Variant 1 or 3 and Q9 = 1 or 2, ask Q9a]

Q9a: You answered that it is unlikely that you would schedule an **appointment with your bank**. How important are the following reasons for your answer?

[Randomize order of response options; for each of them, rate from 1 "Not important at all" to 5 "Very important"]

a) I have concerns about whether I can trust the advisor's recommendations
b) I do not expect to obtain useful information in a meeting
c) I am already well informed or prefer to think things through on my own
d) I use other advisory services
e) I do not know with whom to schedule or how to schedule an appointment

[If Variant 2 and Q9 = 1 or 2, ask Q9b]

Q9b: You answered that it is unlikely that you would schedule an **appointment with your bank** within the next 12 months. How important are the following reasons for your answer?

[Randomize order of response options; for each of them, rate from 1 "Not important at all" to 5 "Very important"]

a) I have concerns about whether I can trust the advisor's recommendations
b) I do not expect to obtain useful information in a meeting
c) I am already well informed or prefer to think things through on my own
d) I use other advisory services
e) I do not know with whom to schedule or how to schedule an appointment
f) I will only deal with the follow-up financing later

[If Variant 1 or 3 and Q9 = 3 or 4, ask Q9c; if Variant 2 and Q9 = 3 or 4, ask Q9d]

Q9c/Q9d: You answered that it is likely that you would schedule an **appointment with your bank** [in Variant 2, add: "within the next 12 months"]. How important are the following reasons for your answer?

[Randomize order of response options; for each of them, rate from 1 "Not important at all" to 5 "Very important"]

a) I trust the advice of the bank advisor
b) I would like to better understand my situation and options
c) I try to negotiate more attractive loan terms
d) I use my bank advisor as my main point of contact for loan questions

Q10: Would you use **other information sources** to prepare for the expected interest-rate increase? *Multiple answers possible.*

[Randomize order of response options; keep "No, I would not use other sources" at the bottom]

a) Independent advisors/brokers
b) Other banks
c) Finance apps or online tools
d) Social media (e.g., Instagram, Facebook, X/Twitter, online forums)
e) Printed guides or traditional media (print, TV, radio)
f) Family, friends, or coworkers

g) No, I would not use other sources [Exclusive response]

[Show the respective framed text summarizing the role-play on top of question]

Q11: How likely is it that, to prepare for the expected increase in interest rates, you would **reduce the remaining loan balance**? Such a reduction can occur through annual prepayments during the fixed-rate period (i.e., voluntary extra repayments) or partial repayments at the end of the fixed-rate period.
[Response options: 1 ("Very unlikely"), 2, 3, 4 ("Very likely")]

[If Q11 = 1 or 2, ask Q11a]
Q11a: You answered that it is unlikely that you would **reduce the remaining loan balance**. How important are the following reasons for your answer?
[Randomize order of response options; rate each item from 1 "Not important at all" to 5 "Very important"]
a) I have other priorities for my savings (e.g., larger purchases, emergency fund)
b) I prefer to invest my savings elsewhere
c) I benefit from tax advantages due to the outstanding loan
d) I am willing to tolerate higher monthly payments due to the rate increase

[If Q11 = 3 or 4, ask Q11b]
Q11b: You answered that it is likely that you would **reduce the remaining loan balance**. How important are the following reasons for your answer?
[Randomize order of response options; rate each item from 1 "Not important at all" to 5 "Very important"]
a) I want to reduce interest costs
b) I want to get rid of outstanding debt quickly
c) I view paying down the loan as an attractive "investment" of my savings
d) I want to avoid a (large) increase in the monthly payment

[If Variant 1 or 3 and Q11 = 3 or 4, ask Q12a; if Variant 2 and Q11 = 3 or 4, ask Q12b]
Q12a/Q12b: How would you reduce the remaining loan balance?
Multiple answers possible.
a) Prepayment(s) before the end of the fixed-rate period [In Variant 2 instead allow: "Prepayment(s) within the next 12 months" and "Prepayment(s) at later dates"]
b) Partial repayments at the end of the fixed-rate period
c) Don't know [Exclusive response]

[Show the respective framed text summarizing the role-play on top of question]

Q13: We would now like to ask about **other possible actions**. There will be no follow-up questions on these actions. [In V2, add: "Please focus on actions planned within the next 12 months."]

How likely is it that you would already fix future loan terms such as the interest rate—so that this uncertainty is eliminated? This is possible via a **forward loan**.
[Response options: 1 ("Very unlikely") to 4 ("Very likely")]

How likely is it that you would **spend less to save** for the future interest-rate increase?

[Response options: 1 (“Very unlikely”) to 4 (“Very likely”)]

How likely is it that you would try to **increase your income** to save for the future interest-rate increase?
[Response options: 1 (“Very unlikely”) to 4 (“Very likely”)]

How likely is it that you would **compare loan offers from different providers**?
[Response options: 1 (“Very unlikely”) to 4 (“Very likely”)]

For how long would you want to fix the **3.5% interest rate** after the fixed-rate period ends? Assume the remaining loan term exceeds 15 years.
a) One year
b) Five years
c) Ten years
d) As long as possible

Q14: How familiar are you with prepayments during the fixed-rate period or partial repayments at the end of the fixed-rate period as ways to reduce the remaining balance of a mortgage loan?
[Likert scale from 1 (“Completely unfamiliar”) to 4 (“Very familiar”)]

Q15: How familiar are you with forward loans as a way to lock in future loan terms already today?
[Likert scale from 1 (“Completely unfamiliar”) to 4 (“Very familiar”)]

C.4 Post-vignette section

Q16: You have now reached the final part of the survey. We would like to ask a few questions about your attitudes and your situation.

To what extent do you agree with the statements below?
[Likert scale from 1 (“Strongly disagree”) to 5 (“Strongly agree”)]

a) I am willing to take risks when making financial decisions
b) I try to get rid of outstanding debt as quickly as possible
c) A bank’s reputation plays an important role in my choice of lender
d) My bank will only present me with a product offer if it is in my best interest
e) Because loan interest rates have increased, I have started to save more money in recent months than before
f) For my saving and spending decisions, I create and follow a plan or rules
g) I have good financial knowledge

Q17: After paying your essential monthly expenses such as groceries, utilities, and debt payments, how much money typically remains for other spending or for saving?

a) € 0 (no money left)
b) Less than € 100
c) € 100 to € 249
d) € 250 to € 499
e) € 500 to € 749
f) € 750 to € 999

g) € 1,000 to € 1,249
h) € 1,250 to € 1,499
i) € 1,500 or more

Q18: Do you own real estate?
Multiple answers possible.
a) Property I live in
b) Rental property
c) Vacation home
d) Other real estate
e) I do not own any real estate [Exclusive response]

Q19: Do you own the following financial products?
Multiple answers possible.
a) Savings accounts (e.g., instant-access or time deposits)
b) Life insurance policies
c) Bonds
d) Stocks
e) Gold or other precious metals
f) Cryptocurrencies
g) Consumer loans
h) Mortgage loans
i) I do not own any of these financial products [Exclusive response]

Q20: What is your **household's total monthly net income**?

Note: This refers to the sum of wages, salaries, income from self-employment, pensions, or retirement income, each after deduction of taxes and social security contributions. Please also include income from public benefits, rental income, housing benefits, child benefits, and any other income.

If your household's net income was irregular over the past 12 months, please provide an average over the last 12 months.

a) Under € 1,000
b) € 1,000 to € 1,999
c) € 2,000 to € 2,999
d) € 3,000 to € 3,999
e) € 4,000 to € 4,999
f) € 5,000 to € 5,999
g) € 6,000 to € 7,999
h) € 8,000 or more
i) Prefer not to say

Q21: What is your highest educational attainment?

a) No degree
b) Lower secondary school certificate (Hauptschulabschluss)
c) Intermediate secondary school certificate (Realschulabschluss)

d) Upper secondary school leaving certificate ((Fach-)Abitur)
e) Vocational training/apprenticeship
f) Master craftsman/technician qualification
g) University of applied sciences degree
h) University degree
i) Doctorate

Q22: What do you think is the effect of an **unexpected increase in interest rates** in the economy (by the central bank) on the following macroeconomic variables?
[Response options: "Strong decrease", "Slight decrease", "No effect", "Slight increase", "Strong increase"]

a) Inflation rate
b) Economic growth
c) Stock prices
d) House prices

Q23: How interesting did you find this survey?
[Likert scale from 1 ("Not interesting at all") to 5 ("Very interesting")]

Q24: Do you have any suggestions or feedback about our survey? Please share them here (**optional**).
[Open-ended response field]

Q25: Thank you very much for participating in our survey!

As a thank-you for your participation, you will receive an Amazon voucher worth €10. To receive the voucher, please confirm that you agree to be contacted by us for the purpose of sending the voucher, and in the next step provide your e-mail address.

a) Yes, I would like to receive the voucher
b) No, I do not want to receive the voucher

[If Q25 = a), show Q25a on the same screen]

Q25a: Please enter your e-mail address for sending the voucher:
[Allow continuation only if the two e-mail entries match]

Enter e-mail address:
Confirm e-mail address:

Q26: Once again, thank you very much for your participation! Your responses have been saved.

You can now close this window in your browser.

D Letter text

This section reports the text of the letter, translated from German to English. The gray text indicates which letter variants include which letter sections and the position of two figures that are also part of the letter. Our partner bank asks us not to display the original letter, so we show letter figures separately in Figure A.7. The original letter also includes the bank letterhead and contact details of the respective mortgage advisor.

How do you deal with higher mortgage rates?

Dear XXXX,

—— Section 1: included in variants 1,2, and 3 ——

Since the beginning of 2022, market interest rates have risen significantly. Together with Goethe University Frankfurt, we investigate how borrowers deal with the increase in interest rates. As part of this study, we would like to provide you with relevant information some time before the fixed interest rate on your mortgage comes to an end.

—— Figure 1: recent increase in mortgage rates ——

According to the Bundesbank, the average fixed interest rate on newly originated mortgages in Germany is currently 4% per year. The interest rate at which we can continue your contract may be higher or lower than this value. This is because the final value depends primarily on market developments[.]

—— Section 2: included in variants 1 and 3 ——

[...] that cannot be predicted. For example, a current study by the Bundesbank (Survey on Consumer Expectations, date: August 2024) shows that 40% of Germans expect an increase in loan rates. 20% of respondents believe that lending rates will fall.

[page 1]

—— Section 3: included in variants 1 and 2 ——

An increase in interest rates can imply significantly higher monthly payments after the end of your fixed interest period. This example illustrates the possible impact:

—— Figure 2: initial impact of higher rates on interest payments ——

—— Section 4: included in variants 1, 2, and 3 ——

In principle, there are different options to deal with increased mortgage rates. These include:

- You reduce the loan amount by making extra payments during the fixation period and/or a (partial) prepayment. Extra payments are possible once a year, provided that the contract allows them; prepayments can be made after 10 years from origination for fixation periods of more than 10 years and at expiration of the fixation period.
- You take out a forward loan or a home savings plan. This gives you planning certainty, as future fixed interest rates and payments are predetermined.
- You build up savings to be able to make higher payments in the future.

Which option is most appropriate for your situation and best suited to you depends on various factors. We are always available for a consultation.

[Signature from a manager of the bank responsible for retail customers]

As part of the joint study with Goethe University, you may receive an email in the coming weeks inviting you to participate in an online survey run by Goethe University. We appreciate your participation and thank you in advance.

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